

THE  
ORIGINAL HEIDELBERG  
CYLINDER

SHEET SIZES **15<sup>3</sup>/<sub>4</sub> X 23"** (40 x 58,5 cm)  
**18 X 23"** (46 x 58,5 cm)

SUPPLEMENTARY MANUAL



HEIDELBERGER DRUCKMASCHINEN  
AKTIENGESELLSCHAFT  
HEIDELBERG

50, 70, 100, 150, 200, 300, 400, 500, 600, 700, 800, 900, 1000

HEIDELBERG DRUCKMASCHINEN AKTIENGESELLSCHAFT

## PREFACE

These instructions are a supplementary manual to the master manual of the Heidelberg K line machines. In this book we cover operation of the

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**Original Heidelberg Cylinder 15 3/4" X 23" (Model KSB)**

and the

3,7 cm)

3,7 cm)

**Original Heidelberg Cylinder 18" X 23" (Model KSBA)**

In this manual both machines are just called Original Heidelberg Cylinder.

We recommend to every printer that he should first read the master manual.

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The hints and suggestions in this supplementary manual have been proved by practical day-to-day experiences. We hope that they will be a valuable source of reference for your daily work.

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**HEIDELBERGER DRUCKMASCHINEN  
AKTIENGESELLSCHAFT  
HEIDELBERG**

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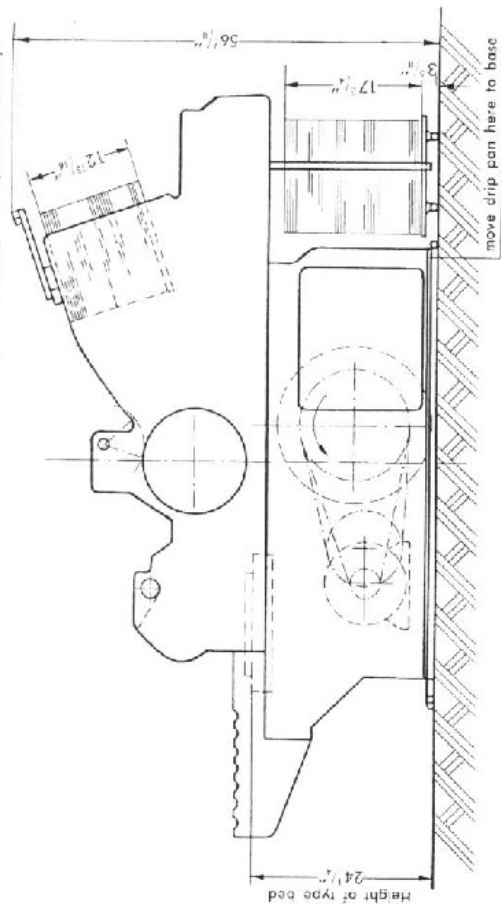
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## SPECIFICATIONS

	Model KSB	Model KSBA
Largest sheet size	15 3/4" X 23"	18 X 23"
	(40 X 58,5 cm)	(46 X 58,5 cm)
Smallest sheet size	4 15/16" X 5 7/8"	5 1/2" X 7 1/8"
	(12,5 X 15 cm)	(14 X 18 cm)
Largest sheet two-up	11 X 15 3/4"	11 X 18"
	(28 X 40 cm)	(28 X 46 cm)
Smallest sheet two-up	4 15/16" X 5 7/8"	5 1/2" X 7 1/8"
	(12,5 X 15 cm)	(14 X 18 cm)
Inside chase measurements:		
standard chase	15 1/2" X 21 1/8"	17 39/32" X 21 1/8"
	(39,2 X 53,7 cm)	(45,5 X 53,7 cm)
skeleton chase	15 1/2" X 21 15/16"	17 39/32" X 21 15/16"
	(39,2 X 55,7 cm)	(45,5 X 55,7 cm)
Maximum forme:		
in standard chase	15 X 21 1/8"	17 1/8" X 21 1/8"
	(38 X 53,7 cm)	(43,5 X 53,7 cm)
in skeleton chase	15 X 21 7/8"	17 1/8" X 21 15/16"
	(38 X 55,7 cm)	(43,5 X 55,7 cm)
locked between bearers	15 X 22 3/4"	17 1/8" X 22 13/16"
	(38 X 58 cm)	(43,5 X 58 cm)
Gripper margin adjustable from	5/16" to 35/64"	5/16" to 35/64"
	(8 to 10 mm)	(8 to 10 mm)
Printing distance from front edge of sheet	15 3/8"	17 1/2"
	(39 cm)	(44,5 cm)
Speed range	2.500—5.000 i.p.h.	2.500—5.000 i.p.h.
Number of forme rollers	4	3 + 1 rider roller
Number of roller tracks	4	4
Packing thickness	appr. .047"	appr. .047"
	(appr. 1,2 mm)	(appr. 1,2 mm)
Power requirements	5,5 HP	6,8 HP
	(4 kW)	(5 kW)
Spare requirements (length X width)	8'4" X 4'9"	8'4" X 4'9"
	(2,53 X 1,45 m)	(2,53 X 1,45 m)
Height	4'9"	4'9"
	(1,45 m)	(1,45 m)
Net weight of machine	5.630 lbs.	5.660 lbs.
	(3.000 kg)	(3.030 kg)

**Floor Plan of Original Heidelberg Zylinder 15 3/4 x 23" and 18 x 23"**  
(Model KSB) (Model KSBA)

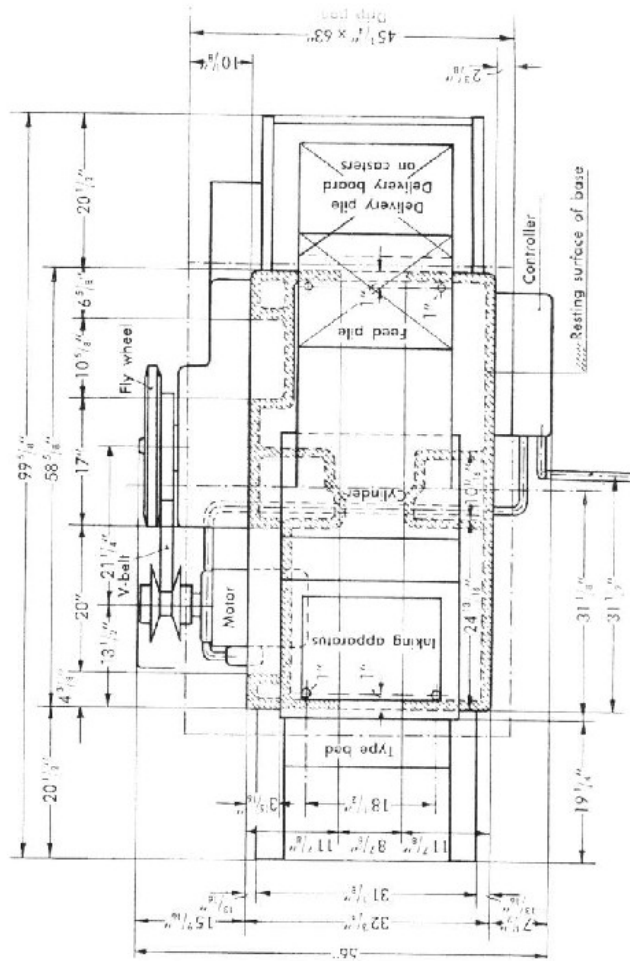


**Oil Drip Tray**

We strongly recommend placing the machine on an oil drip tray, to prevent soiling of the floor. This is particularly important on concrete, which is subject to decomposition when saturated with oil or grease.

Each stroke of the central lubrication handle forces approximately 1.8 cubic inches of oil under high pressure into the bearings. The used oil which is forced out drains on the drip tray, which should be cleaned weekly.

The drip tray generally comes with a rolled 1/4" or 3/8" bead and measures 3'10" by 5'3". It is made by galvanized sheet iron, and can be obtained from our agency (or made locally).



Minimum distance on all 4 sides = 25"  
Floor contact surface abt. 13 cu. ft. (1.2 m<sup>3</sup>)  
Net weight of the machine abt. 6630 lbs (KSB) and abt. 6680 lbs (KSBA)

**MAINTENANCE**

### Running in Machine

Any new piece of machinery must be carefully run in. In the first two weeks of operation printing speed should not exceed 3,000 l.p.h.

With each of our machines we supply an oil chart, developed in cooperation with several well-known mineral oil firms.

We would particularly refer you to the running-in oils for the gear box listed under (b) in the oil chart. These running-in oils are enriched with additives against wear and seizing; do not also use Molykote additives. (We are not necessarily opposed to the use of Molykote, provided the specified quantities are strictly adhered to.)

Normally, the pump handle of the central lubrication is pulled to the left, up to the red marking, once every four operating hours. During the running-in period in the first two weeks, we recommend one stroke of the central lubrication lever every two hours. A careful running-in period will ensure many years of trouble-free service and a minimum of wear.

### Lubrication of the Machine

Careful and regular lubrication is vital for long machine life.

The lubrication points are divided into three groups:

1. **Daily.** All red-marked points and nipples must be lubricated daily.
2. **Weekly.** All yellow-marked points and nipples are to be lubricated weekly.
3. **Semi-annual.** All green-marked bearing points require lubrication every six months.

Lubrication nipples have been provided to protect the bearing points against dirt by paper dust and anti-set-off spray powder.

At same points, lubrication must be done exclusively with grease. To prevent any confusion, oiling points have been given a different-shaped nipple from those which require grease. Two different types of lubrication gun are supplied with each machine; the mouthpieces are different. The short lubrication gun is for oiling, while the longer one is for grease nipples, to be filled with first-class ball-bearing grease.

### Oil Lubrication

All bearings which must be lubricated with oil are fitted with round protruding nipples. Use the shorter gun (Ill. 1). Oiling must be in accordance with specifications given on the instruction plates of the machine.

We recommend only top quality oil, as specified in the lubrication chart.

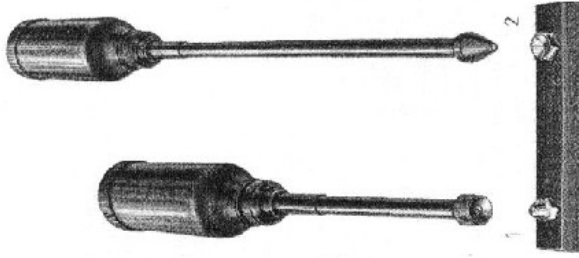


Illustration 1

Attention is particularly drawn to the following oil lubrication points:

1. On the impression cylinder below the cylinder grippers, there is an oiling point. (Ill. 2)

A wide groove on this side is marked in yellow, indicating weekly lubrication. At the end of the groove there is an oil nipple for lubrication of the cylinder gripper movement.

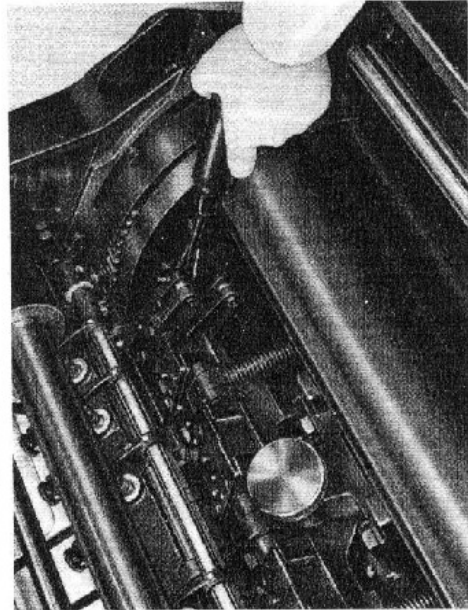


Illustration 2

2. At the bottom of the air pump there is another oil lubrication point, close to the valve housing below a hexagon head screw. Stop the press with the pump piston in the end position, i.e. at the pump bottom. When taking out the hexagon head screw you have access to the oil nipple for lubricating with the oil gun. After lubrication, put in the hexagon head screw and tighten it firmly. This oil nipple should be adequately lubricated every three months.

3. A rectangular recess in the curved aluminium feed board provides for lubrication of the transfer gripper carriage. (Furthermore, this recess has been provided to make it easier for the printer to put in the centre side-lay when printing two-up).

Through this recess at least once a week lubricate the oil felt positioned in the bearing of the gripper carriage (Ill. 3).

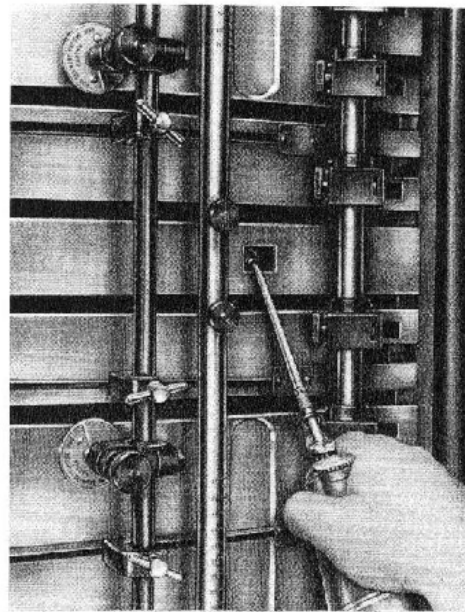


Illustration 3

### Grease Lubrication

The following parts should be lubricated only with grease:

#### 1. Bearings of the feeder

Lubrication is carried out below the aluminium feed board, from the front side of the feed table. Stop the press with the

### Lubrication of Feeder

● feed grippers in lower position close to transfer grippers

● feed grippers in top position close to sucker bar

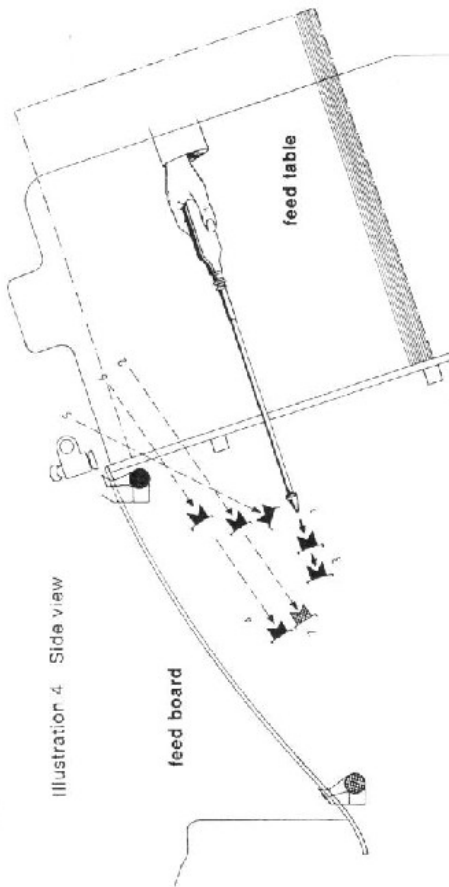
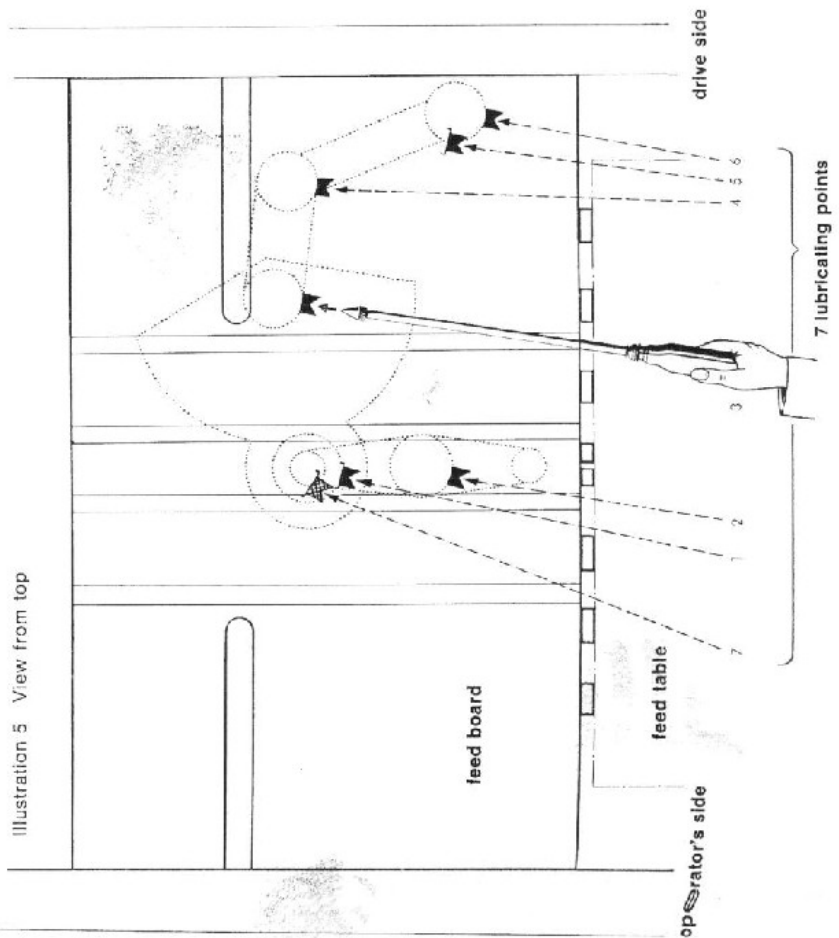


Illustration 4 Side view

Illustration 5 View from top



7 lubricating points

for lubrication, stop the machine in the correct position, namely when the transfer grippers are just beneath the side-lay spindles. The felt can then be reached with the oil can.

A few drops of oil once a week are sufficient. Excessive oil may drip, possibly soiling the printed sheets.

travelling grippers close to the suckers. In this position 6 nipples point to the delivery side. The 7th nipple also can be reached from the delivery side through the front paper standards when the machine is stopped, with the travelling grippers close to the bottom of their travel. Exact position of the nipples as well as correct position of the grease gun is shown in Illustrations 4 and 5.

Monthly lubrication is required.

## 2. Lubrication of Bearings for the Forme Rollers, Vibrator Roller and Distributor Rollers

14 bearings for the forme rollers, vibrator roller and distributor rollers (7 bearings on each side) must be lubricated with grease each week.

These lubrication points have been fitted with hollow type nipples (except for the bearings of the vibrator roller and the distributor rollers) and can thus be fed only by the long shaft (grease) lubrication gun. Only first-class roller bearing grease should be used, since others will resinify in time.

The bearings of the vibrator roller and the distributor rollers should be greased manually each week. Place roller bearing grease on the forefinger, and deposit it into the open bushings of the bearings before the rollers are inserted.

Illustration 5 shows use of the grease gun on the forme roller nipple. Lubrication is carried out under high pressure by pushing the gun forward about 1".

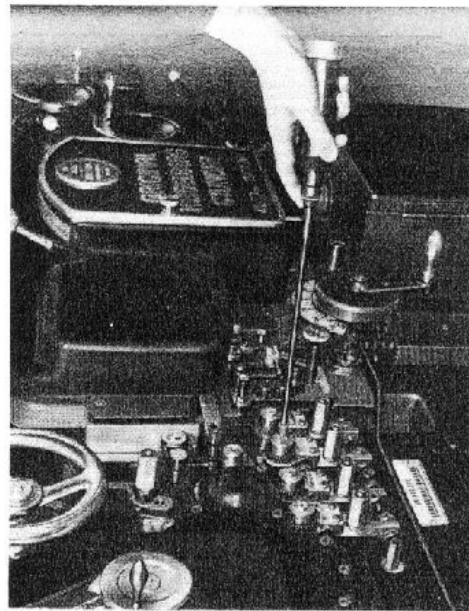


Illustration 5

## 3. Lubrication of the Upper Gear Rack

For lubricating the last teeth of the upper gear rack below the type bed, a grease nipple is provided below the guard at the front end of the type bed (Illustration 17). This nipple is marked in red, meaning that DAILY greasing is required.

This lubrication provides only the last four teeth of the gear rack with grease. It must be carried out only when the type bed is at its front dead centre. Only when the type bed is in this position will the last four teeth actually get sufficient grease.

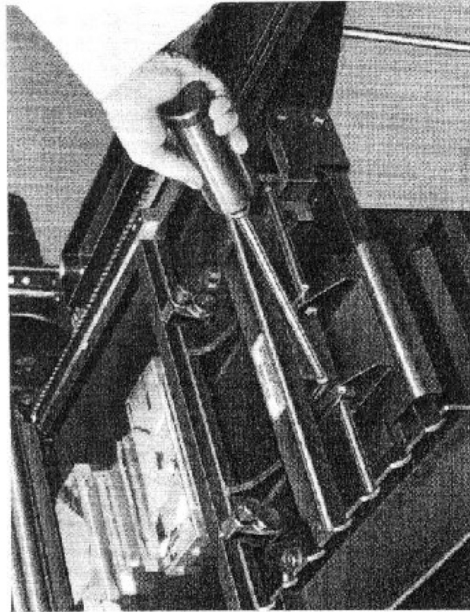


Illustration 7

In addition, the remaining teeth of both gear racks as well as the pinion gear should be thoroughly greased by hand once a month. Access to these gears is best obtained by removing the drawers in the base below the inking unit (see page 18).

Furthermore, it is recommended that the cover guard of the base (inking and) be pulled out once daily, in order to squirt oil onto the complete pinion roller rack. This will soften up paper remnants which may have been pressed between the teeth of the pinion gear. Once softened up, they will be squeezed out more easily.

#### 4. Lubrication of the Drive Pulley of the Motor

Lubrication is carried out here through an opening on the pulley guard (III. 5). The point is marked red (daily lubrication with grease).

Lubrication is possible from the top as well as from the side.

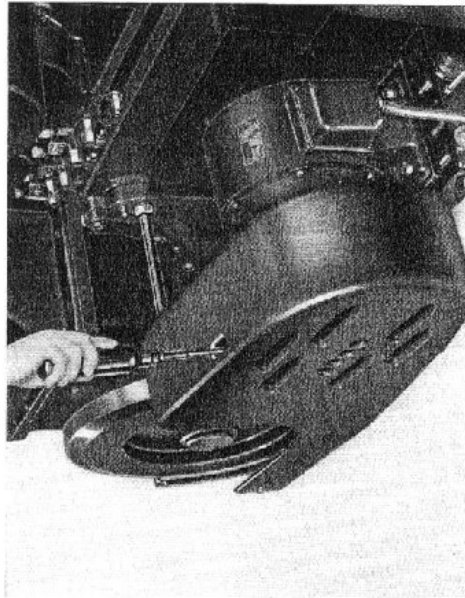


Illustration 8

The oil reservoir for the one-shot central lubrication is fitted to the side frame of the delivery unit on the operator's side (III. 9).

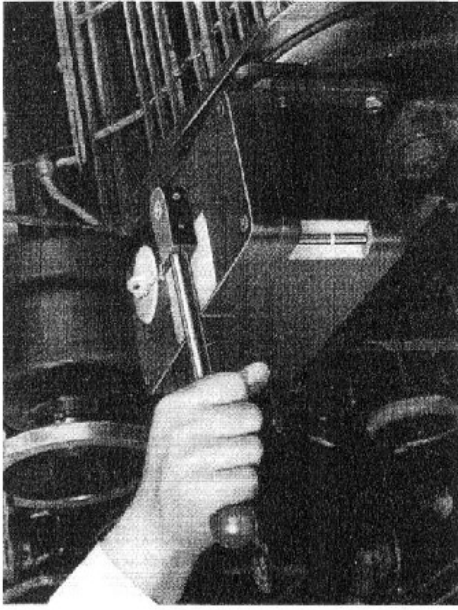


Illustration 9

#### Central Lubrication

The one-shot central lubrication pump supplies the exact amount of oil required to the major lubrication points.

In operating the central lubrication the following points must be observed:

1. If the machine is idle for 2 to 3 days or longer, the red-balled handle must be pulled fully to the left up to the red marking, at least four times **before starting the machine**. About 10 minutes after starting the machine, we recommend a fifth stroke of the pump handle.

It is essential to follow these instructions, since the oil lines of the central lubrication system may partially drain. **When operating the lever a heavy counter-pressure should build up.** The presence of this counter-pressure guarantees that enough oil gets to the bearing points. It may be necessary to operate the lever several times until the counterpressure builds up.

2. After this, the lubrication pump should be operated up to the red marking every four hours **while the machine is running**. Lubrication when running at a low speed will guarantee a better oil distribution.

Emptying of the oil reservoir should be avoided. The oil level can be checked at the glass gauge of the pump. Should the level in the gauge get below the mark, new oil must be added. Use oil with a viscosity of 10–12° E (Engler) at 50° Celsius.

### **Gear Box Oil Bath**

A weekly check must be made of the oil level in the gear box on the drive side of the press. For the first filling, about 1 gallon of oil is required.

For selecting the correct oil, please refer to the lubrication chart supplied with each press.

A dip-stick for checking the oil level is located at the bottom of the gear box. The dip-stick is pulled out, wiped clean and redipped to ascertain the oil level in the gear box. The oil should reach the indented ring on the dip stick about  $\frac{3}{4}$ " from the tip (illustration 10).

Use only those oils recommended by your agency.



Illustration 10

**C**hecking of the oil level should, of course, only be carried out when the machine is idle.

When additional oil is required, add only enough to bring it up to the level mark. Sometimes the level of oil in the gear box will rise above the mark on the dip-stick, due to oil draining

from certain bearings connected to the central lubrication system. Such excess oil should be drained off by removing the hexagon head plug at the bottom edge of the gear box below the flywheel (see arrow in illustration 10).

### **Cleaning the Machine**

The machine should be cleaned **thoroughly** at least once a week. Special care must be taken to remove all spray deposits from open oil holes. All important lubrication points are fitted with nipples to prevent clogging. All air blast holes in the tubes on the feeder should be cleaned each week with a brush. Go over the bright parts with an oily cloth after cleaning to prevent rust. For current machine maintenance, rust-preventive oils are recommended, (e.g. "Rust-Ban 3370", a product of Esso).

The automatic cut-out device on the transfer gripper bar should be cleaned every three months with white spirit, to ensure free movement of the control rods.

In particular, the inking unit should be cleared carefully once a week. Take out the rollers and wash them manually. For the Friday afternoon general cleaning, we recommend treating the rubber rollers with a regeneration paste. Best results will be obtained when leaving the paste on the rollers over the weekend. Then (since the paste contains some fat) wash it off with lukewarm water. Use a rag dipped in water for cleaning your rollers. Life and resiliency of rollers is lengthened considerably by this treatment. Plastic rollers should not be treated with regeneration paste, which will attack the surface of the plastic material. Accordingly, plastic rollers must be cleaned very carefully at regular intervals. The sludge basin and the wash-up blades should be also cleaned regularly, so that ink residues do not harden.

### Cleaning the Air Filter and the Paper Dust Screen in the Suction and Blast Air Pump

In the cover of the air pump there is a filter through which the air must pass when entering the pump. This filter has to be removed, dipped into benzene or cleaning solvent and rinsed. This should be done each week. Do not use rubber roller cleaning solvents which contain oil and will not dry quickly. Be certain the filter is dry before putting it back (ill. 11).

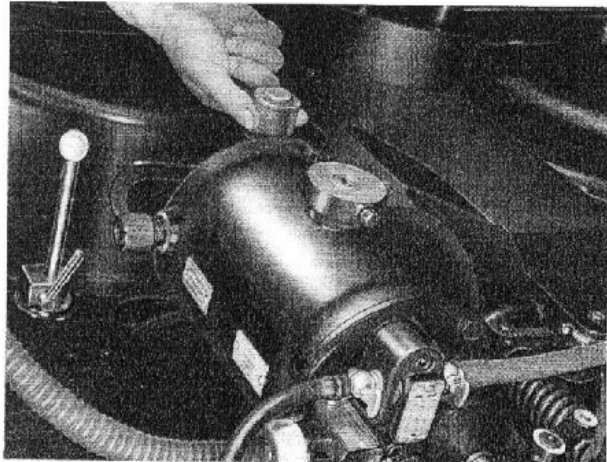


Illustration 11

At the same time the paper dust screen in the valve body of the pump bottom should be removed and cleaned. Illustration 12 shows how the screen is removed after unscrewing the hose nipple.

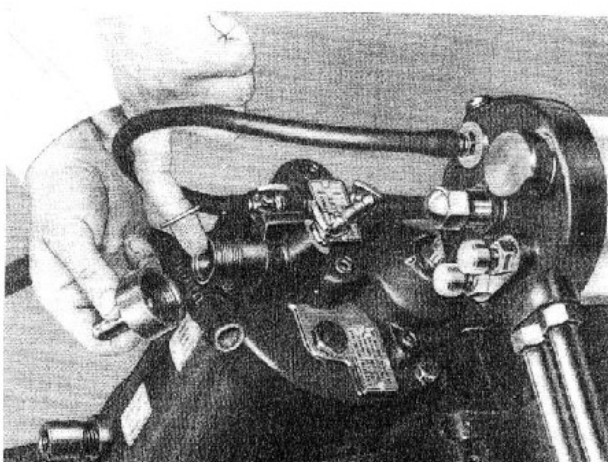


Illustration 12

This cleaning must be done **daily** when running very dusty stock.

### Cleaning of Main Pinion, Gear Racks and Crankshaft Area

The main pinion, the gear racks and the crankshaft area in the base have to be cleaned and greased regularly. For this purpose the base has been made accessible on the inking end, delivery end, and operator's side.

Illustration 13. Removal of rail guided guard positioned on the inking end makes the pinion and the lower gear rack accessible from the top. The best position for cleaning is obtained when the type bed is in its rear position on the delivery end, just before reversing for the return stroke.

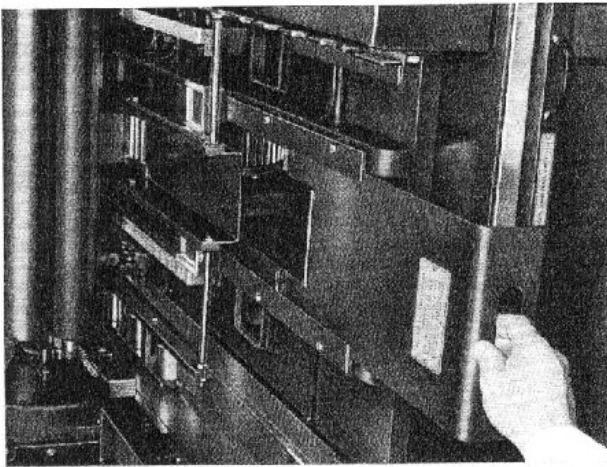
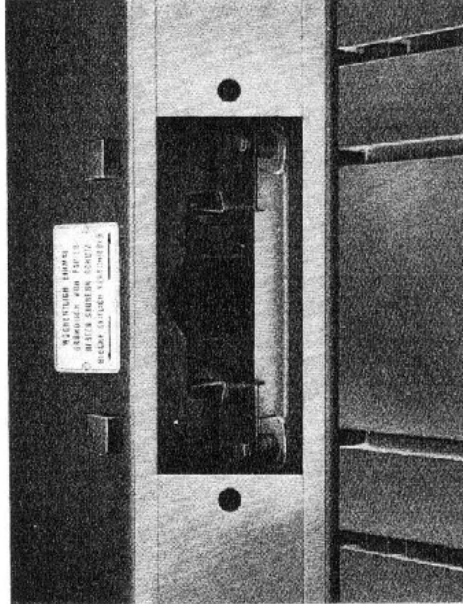


Illustration 13

After cleaning, thorough hand lubrication of the pinion and the gear racks is necessary.

When replacing the guard, be sure it runs in the correct guide rails. Otherwise, the guard may drop into the pinion gear and cause damage.

Illustration 14. An opening is provided in the rear guard behind the delivery pile by pulling two smaller guards to the sides. The most favourable position for cleaning is obtained when the type bed is at the dead centre position on the inking end.



All paper in the crankshaft area must be removed.

Illustration 14

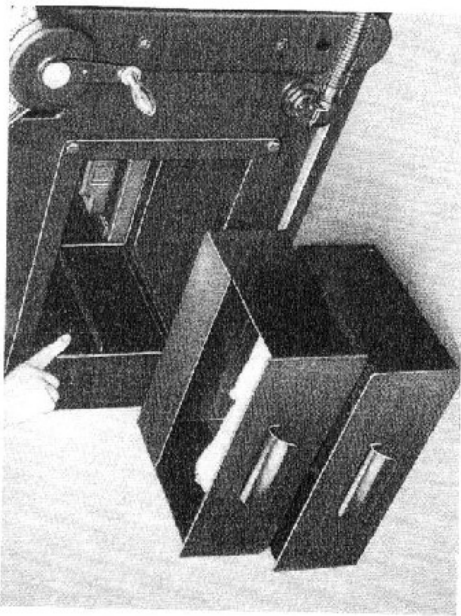


Illustration 15

The two drawers are a good place to store cleaning rags, as well as other useful items. Do not, however, use them for bulky items or springs or, for instance, plastic or rubber hoses which must be rolled together, otherwise when the drawer is pulled out while the machine is running such items may get into the pinion gear.

Illustration 15. If necessary, the printer can clean and grease the pinion and gear racks from the operator's side by removing the two drawers below the inking unit.

The rear side of pinion and gear racks should also be greased by hand after cleaning.

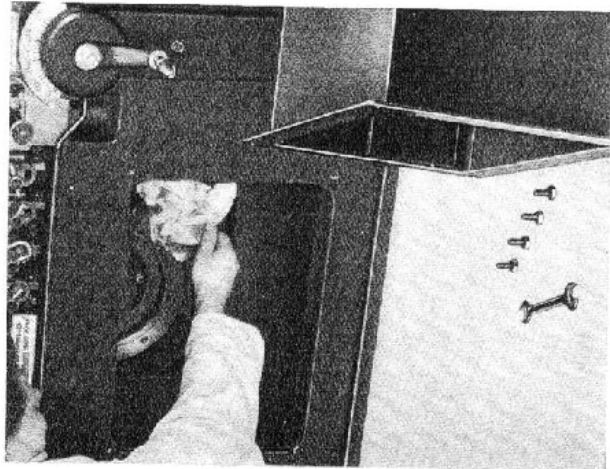


Illustration 16

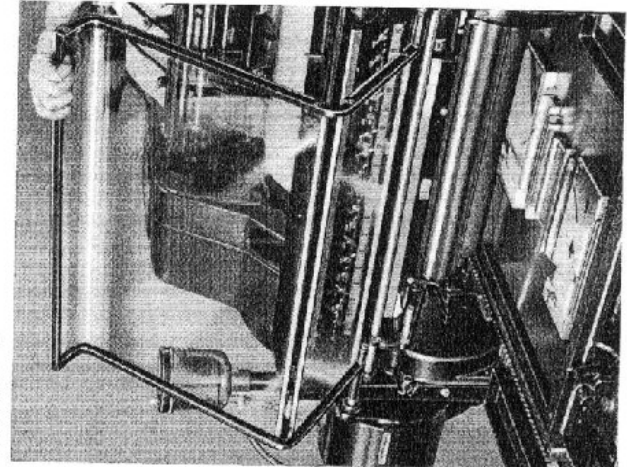
If paper should ever get to an inaccessible place in the base of the machine, and cannot be reached by removing the drawers on the operator's side, the minder can still gain access by taking off the drawer frame. This will rarely be necessary (Illustration 16).

To protect the pinion gear against dirt, replace the guards carefully.

### Forme and Roller Guard

Before the machine can be started the forme and roller guard must be down. As long as the machine is in operation the forme and roller guard cannot be lifted (illustration 17).

Illustration 17



### Important!

Before starting the machine always be certain that:

1. The forme has been locked up securely,
2. Nothing has been left lying on the forme,
3. The quoin key has not been left in one of the quoins,
4. The inking rollers are securely locked,
5. The bearers and racks are free from paper and dirt.

Serious damage can result if the above points are not observed. A warning plate is attached close to the main control lever, giving the above reminders.

### Inking Unit

The inking unit of the Original Heidelberg Cylinder 15 $\frac{3}{4}$  x 23" (Model KSB) is equipped with 4 forme rollers of different diameters, all clearing the maximum forme (see arrow in ill. 18). This is a great advantage, particularly when printing difficult formes. The roller diameters are marked by colour at the journal box, as well as at the roller journal, to make it impossible for the printer to insert a wrong roller (ill. 18).

Ink is distributed by 2 distributing rollers and the vibrator roller, in conjunction with 3 steel distributors of different diameters. Reciprocation can be adjusted from 0-1 $\frac{3}{8}$ ".

The inking apparatus has a dual drive from the type bed, to avoid one-sided stress.

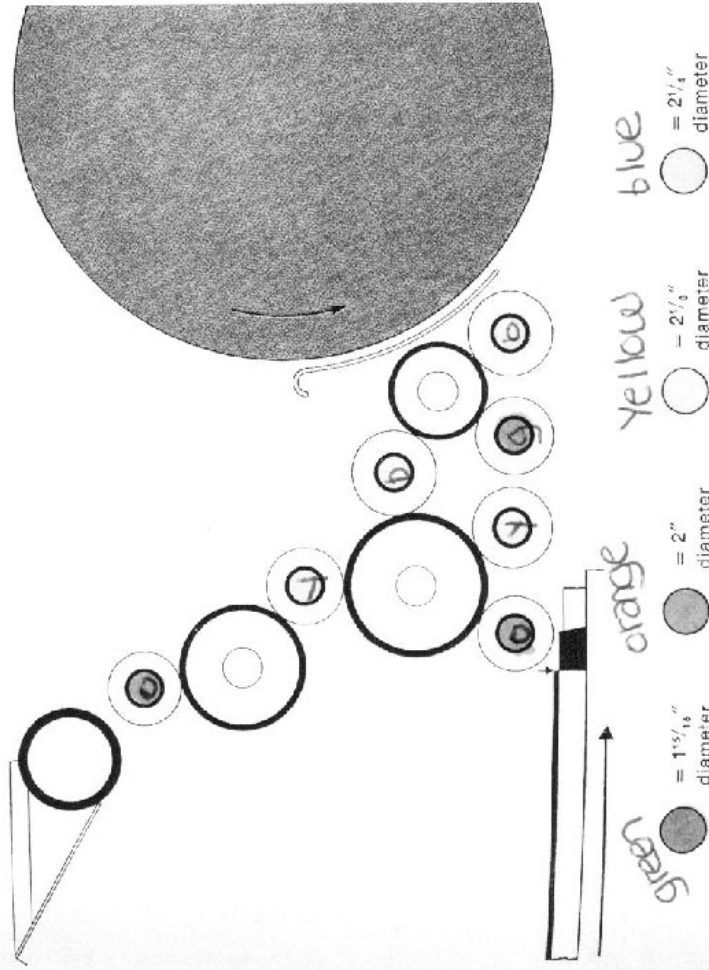


Illustration 18

With the Original Heidelberg Cylinder 18x23" (Model KSB) the type bed has been increased by 2 $\frac{1}{8}$ " while the printing width is the same.

Both machines have the same inking unit. Here again no forme roller reverses on the forme (see arrow). However, on account of the longer type bed with the model KSBA only 3 forme rollers with an additional rider roller can be inserted. We refer to the KSBA inking roller diagramme below (ill. 19).

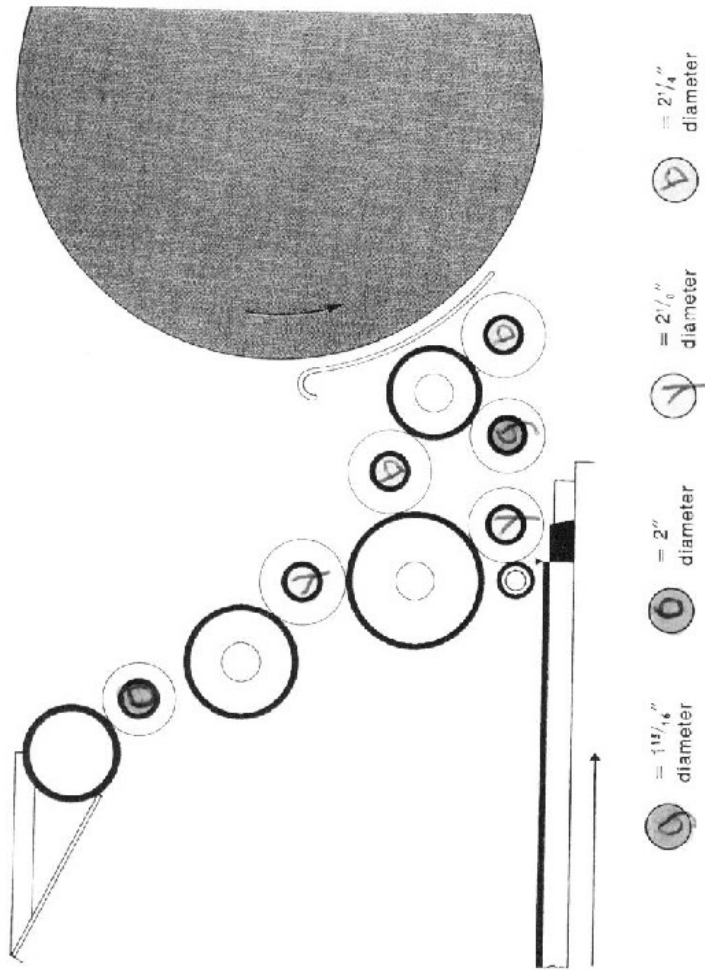


Illustration 19

For type matter or solids which are at least  $1\frac{1}{4}$ " away from the print starting line, it is not necessary to use the rider roller. For solids or half tones, however, which are locked-up at the print starting line, we recommend the use of the rider roller.

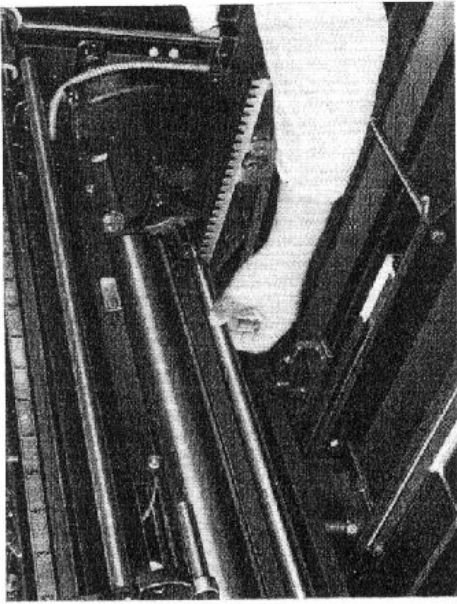


Illustration 20

You insert the rider roller in the same way as you do the forme rollers (ill. 20). The same type of roller locks are used for the rider roller (see page 26).

Put the rider roller with light pressure against the third forme roller and lock up the journal box. It is important that the rider roller touches the forme roller evenly both on the drive side and on the operator's side.

### Inserting and Removing the Vibrator Roller

The socket for the vibrator roller on the operator's side is fitted with a sliding bushing which must be locked into position (illustration 21).

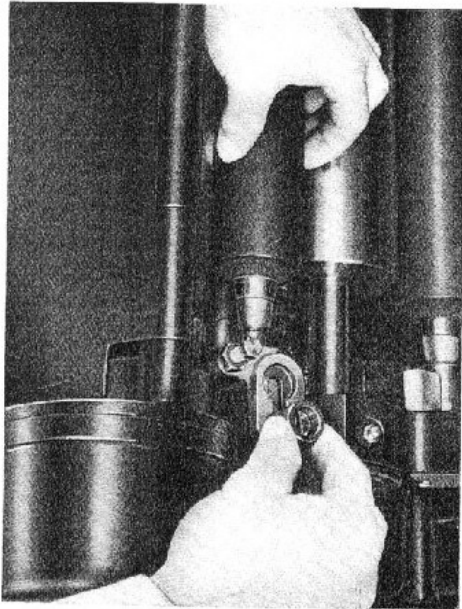


Illustration 21

Illustration 21 shows how the vibrator roller is inserted. The sliding bearing is retracted. The journal of the roller is first put into the retracted sliding bearing and then it is put into the socket on the drive side of the machine. The roller is then lifted up slightly on the operator's side and the sliding bearing is engaged until the spindle journal fits into the bushing and the locking knob engages the countersunk portion.

To remove the vibrator roller the locking knob on the roller socket is first disengaged. Then the sliding bearing can be retracted. The roller journal on the operator's side is pushed into the retracted bearing so the journal on the drive side can be removed from the socket. The vibrator roller is then easily removed.

### Inserting and Removing the 2 Distributor Rollers

First, the needle-bearing sleeve on the operator's side is put on the roller journal. Then the roller journal on the other side is placed into the needle-bearing sleeve already positioned in the guide block on the drive side. The roller is inserted on the operator's side by putting the needle-bearing sleeve with the roller journal into the guide block (illustration 22).

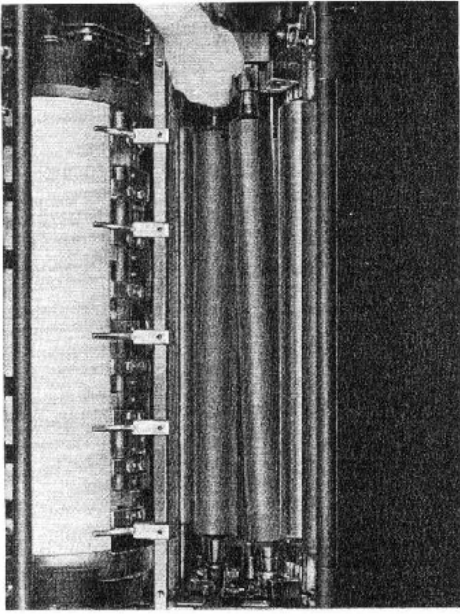
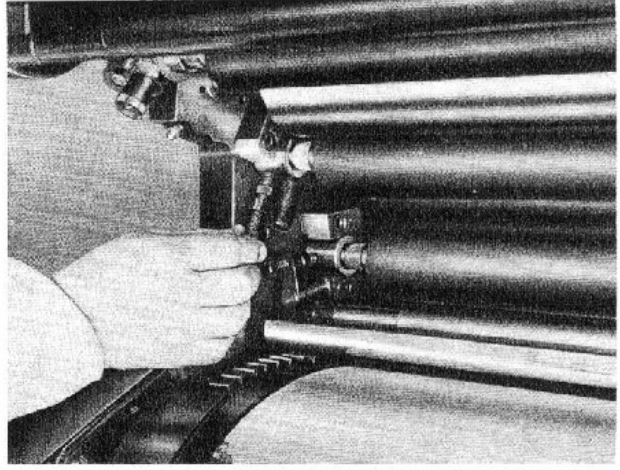


Illustration 22

Illustration 23



To insert the needle-bearing sleeves on the drive side, the safety latch is turned away so that the opening of the guide block is free. After fitting in the needle-bearing sleeve, the safety latch is turned in and locked on top of the adjustment screw (illustration 23).

It is only on the operator's side that the needle-bearing sleeves must be taken out in order to remove the distributor rollers. To be certain that the sleeves are readily available, place them back in the guide block when the distributor rollers have been removed. To keep the needle-bearing sleeves from falling into the machine, close the opening with the latch. Do not change the setting of the adjustment screw if you desire to maintain the same roller alignment.

### Inserting and Removing Forme Rollers

When inserting forme rollers the following procedure is necessary:

1. Run type bed to rear dead centre.
2. The journal box on the drive side is fixed, i.e. it cannot be retracted. For inserting the rollers the journal boxes on the operator's side are released.
3. Start with the forme roller nearest to the cylinder and insert it into the retracted journal box on the operator's side.
4. Insert the roller journal into the journal box on the drive side.
5. The roller journal on the operator's side slides out of the retracted socket and comes to rest on the gear rack below.
6. Lift the roller journal slightly so that it enters the socket when the journal box is put into place.
7. The journal box is locked on the drive side and the operator's side with the T-handle socket wrench, after adjusting the roller (see also page 31, illustration 30).
8. Insert the remaining rollers in the same manner.

For removal of the rollers the hexagon head screws of the journal boxes on the operator's side are released with the T-handle socket wrench. Then the journal box is withdrawn. Thus one roller after the other can be taken out of the machine. The printer must see that the adjustment screws remain in position when removing the forme rollers. This will eliminate new adjustment when reinserting the rollers.

The rollers must, of course, always be put back in the same journal box, because rollers with the same nominal diameter may have slight differences in size.

### Adjusting the Vibrator Roller

Spring tension presses the vibrator roller against the ductor roller on both sides. The contact of the vibrator roller with the steel reciprocating cylinder must be adjusted carefully. Adjustment is shown in illustration 24.

In this position the vibrator roller must be in contact with the steel distributing roller.

This is the first condition for setting the vibrator roller properly.

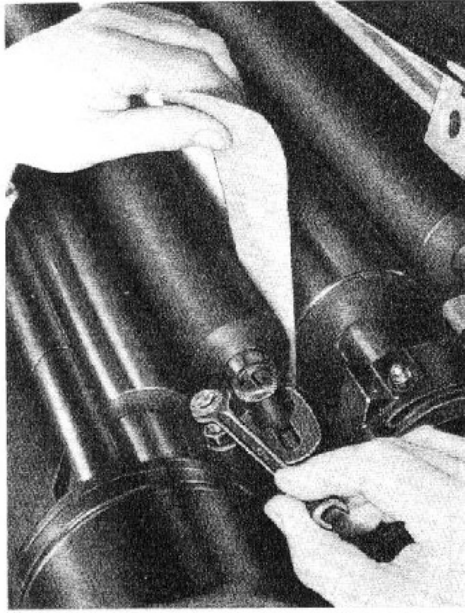


Illustration 24

It is essential that the two adjustment screws be put on evenly. If this is not done, some machine parts may be subjected to excessive strain. It is important that the printer checks the proper setting of the vibrator roller when a new set of rubber rollers is put in. This adjustment is necessary in order to adapt the setting to the new conditions brought about by new rubber rollers.

As you will note from the roller diagrams on the pages 21 and 22, the vibrator roller has a diameter of 2". Under no circumstances should a larger diameter roller be used.

When adjusting the vibrator roller it is best to proceed as follows:

Before beginning this adjustment, run the type bed approximately 8" past the front dead centre.

Beneath each end of the ductor roller, a hexagon adjustment bolt and lock nut will be found. The screws are adjusted on both sides, so that the vibrator roller contacts the steel distributor roller with light pressure. Following this adjustment the lock nuts are tightened. The proper contact of the vibrator roller is checked in the usual way, i.e. with two strips of paper placed between the vibrator roller and the steel reciprocating roller on each end. The adjustment is correct when the paper strips can just be pulled out slowly without tearing.

### Adjusting the Distributor Rollers

Each of the distributor rollers must contact two steel cylinders.

First, the safety latch is released from the guide block on both sides. After releasing the adjustment screw fitted to each needle-bearing sleeve, the roller is pressed slightly by hand against the two steel cylinders. Here again, the proper contact of the distributor rollers with the steel cylinders is checked with two pacer strips (Illustration 25).

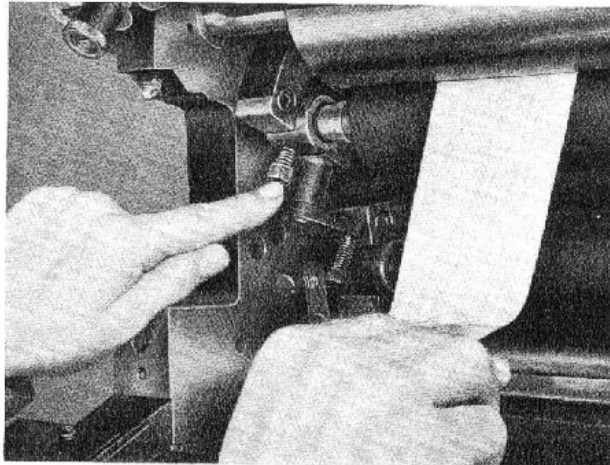


Illustration 25

After the rollers are positioned, the two adjustment screws are screwed into the needle bearing sleeves until they rest on the bottom of the guide block.

After adjustment, the latches are turned into position and secured with a knurled screw.

The position of the adjustment screw needs not be changed when the rollers are removed or reinserted. Maintaining the position of the adjustment screw ensures the identical position of the roller.

### Adjusting the Forme Rollers

The forme rollers must contact the steel distributing cylinders slightly, and be adjusted type-high. First, loosen the hexagon nuts on the journal boxes with the T-handle socket wrench provided, both on the drive and the operator's side. Then proceed by pressing the rollers against the inking cylinder under even pressure of both ends until the roller has the proper contact. At first the hexagon nuts are tightened slightly by hand (Illustration 26).

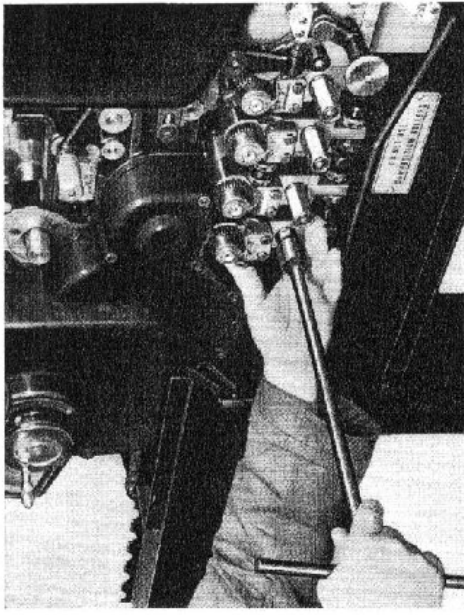


Illustration 26

Only after all rollers have been aligned to the inking cylinders and type height are the 4 journal boxes tightened firmly on both sides with the T-handle socket wrench (Illustration 30).

Adjusting the rollers to type height is made with the roller gauge supplied with the machine. This gauge makes it possible to adjust each forme roller for height without removing the rollers in front of it. All forme rollers may remain in the machine for adjustment. This is of particular importance when the printer wishes to double-check the proper adjustment of single forme rollers for height.

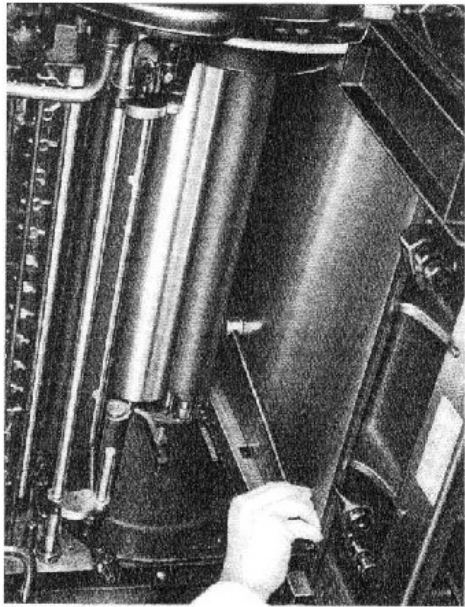


Illustration 27

The gauge is put on the type bed with the flat side and moved in this position behind the roller to be adjusted (Illustration 27). The height of the flat side is lower than type-high, so the gauge can be put in without touching the roller.

The height of the forme roller is adjusted by turning the micro-adjustment screw with the pin wrench (Illustration 29).

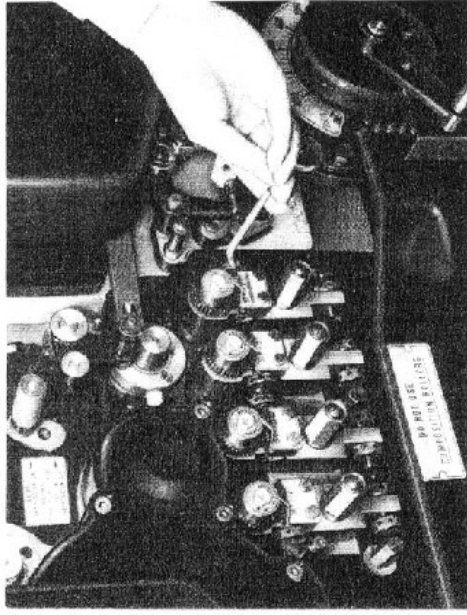


Illustration 28

The microadjustment screw operates a worm gear at the roller bearing which raises or lowers the roller. Above each microadjustment screw a scale indicates the centre position of the roller and shows whether the roller is raised or lowered. The scales can be seen in the illustration.

After adjusting the forme rollers for proper height they must be re-aligned to the inking cylinder on both sides. Then tighten the journal boxes with the T-handle socket wrench (Illustration 30). Tightening the hexagon nuts by hand is not sufficient.

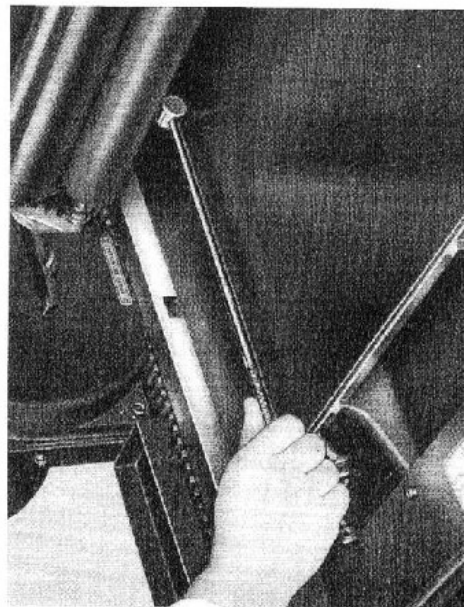


Illustration 28

The gauge is then turned to bring the round portion on the type bed (Illustration 28). In this position the gauge is exactly type high. It is now moved forward or backward beneath the roller. Before being pulled out, the gauge is turned again on its flat side, so the printer can check the ink strip on round portion from contact with the roller. The width of the ink strip should be approximately  $\frac{1}{16}$ ". Since the adjustment of the roller for height is based on the ink strip on the gauge, the roller must be inked.



Illustration 30

Finally, the stop screw at the lower end of the journal box is adjusted to its stop and locked. This will ensure that proper alignment is maintained when work is resumed after idle time.

To facilitate handling the gauge properly a white mark has been recessed into the handle. The gauge is in the correct position for checking the rollers when the white mark is turned up. When the gauge is inserted, the mark cannot be seen from the top.

### Disengaging the Vibrator Roller

The vibrator roller is disengaged when the type bed is in its dead centre position at the inking end. In this position all forme rollers clear the forme.

### Disengaging the Distributor Rollers

On the drive side, both distributor rollers can be disengaged with the roller journal remaining in the needle-bearing sleeve in the guide block. Loosening of the safety latches is not necessary for disengaging on the drive side.

On the operator's side the needle-bearing sleeve is lifted out of the guide block together with the roller journal after the latch has swung away. Place the needle-bearing sleeve on the guide block with the flat portion of the sleeve pointing upward. In this position the sleeve cannot slide back into the guide block opening (Illustration 31).

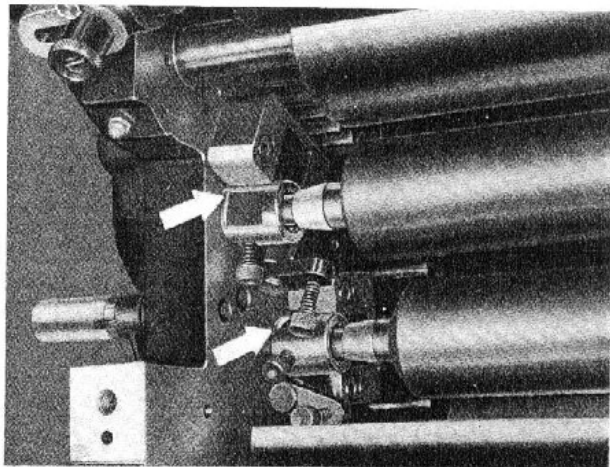


Illustration 31

This illustration shows the two distributor rollers disengaged.

### Disengaging the Forme Rollers

The hexagon nuts for locking the 4 forme roller journal boxes are loosened on the operator's side with the T-handle socket wrench. Move the journal boxes away from the inking cylinders, and retighten the nuts slightly by hand. There is sufficient clearance when the pressure of the roller against the cylinder is relieved. When re-engaging the rollers they are merely moved to their stops, which will give the rollers their original alignment.

### Setting of Ductor Blade and Ink Flow

The ductor blade is regulated by 18 fine threaded screws which can be set to suit the inking requirements of the forme (Illustration 32).

There is a scale on the ductor which is duplicated on the delivery table. The two scales enable the operator to regulate the ink supply accurately.

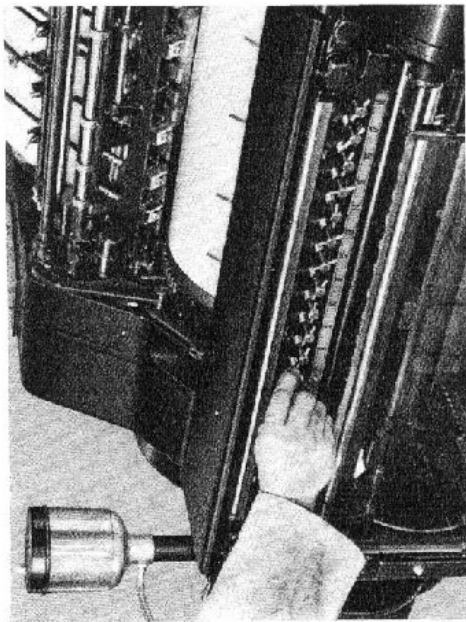


Illustration 32

The ductor roller has an adjustable ink feed from 0—2 $\frac{3}{16}$ " which can be adjusted infinitely by turning a small handwheel on the operator's side (illustration 33).

When setting the ink, it is advisable to work as much as possible with the regulation of the ink feed rather than with the adjusting screws on the ductor. Better distribution is obtained, as there is a thinner film of ink to break up.

The plexiglass guard can be removed for cleaning.

### Engaging and Disengaging Ink Supply

It has previously been explained that the single lever control automatically trips the ink supply when the control lever is off impression.

However, when the ink is to be run up with the control lever off impression, or when it is necessary to trip the ink supply with the control lever on impression, a lever located on the side frame of the inking apparatus must be used.

If the lever is engaged at the top position "INK OFF, IMPRESSION ON" the ink supply is tripped, even when the control lever is on "IMPRESSION". If the lever is engaged at the lower position, where the instruction plate reads "INK ON, IMPRESSION OFF" ink is supplied, even when the machine runs off impression (illustration 34).

This lever is engaged only when the printer wishes to trip the ink while printing, or when he wishes to run up the ink when the control lever is on "RUN" or "PAPER". The lever must be turned to the disengaging position after the required adjustment of the ink flow has been made. This is indicated on the instruction plate.

**Normally the lever remains in the disengaged position; otherwise the automatic trip does not function.**

Illustration 33

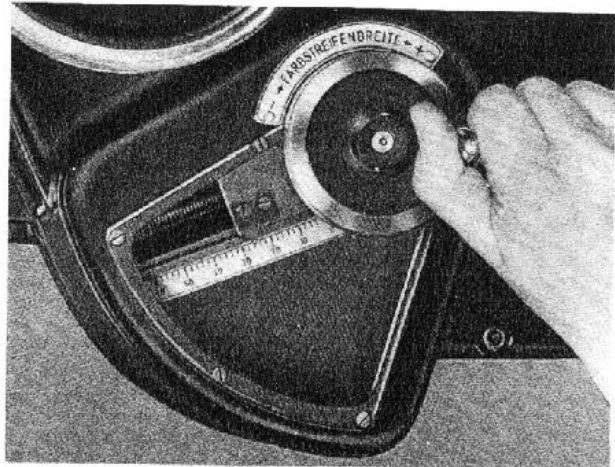
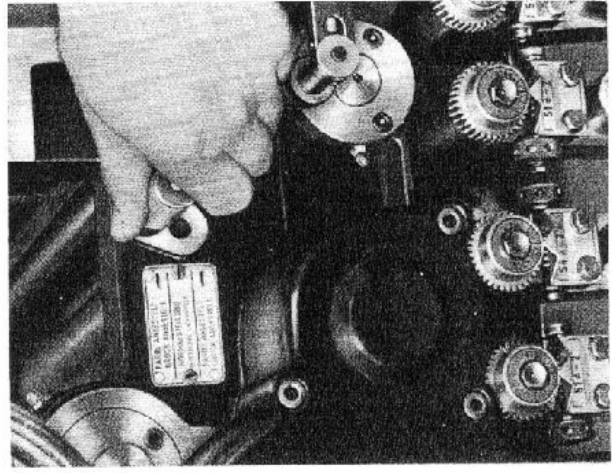


Illustration 34



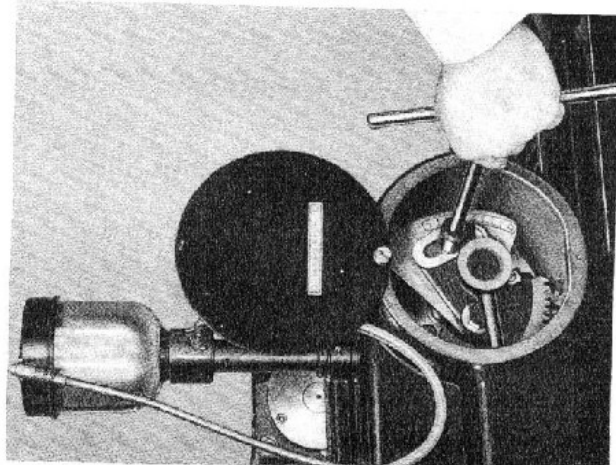
### Regulating the Reciprocating Rollers

The three steel distributors with different diameters reciprocate in opposite directions. Reciprocation can be adjusted from 0— $1\frac{3}{4}$ ".

The regulating mechanism is located on the drive side behind a disc guard which can be swung upward (Illustration 35).

Loosen the hexagon bolt with the T-handle socket wrench (also used for locking the forme rollers), set the indicator on the required reciprocation and retighten the hexagon bolt. The amount of reciprocation depends on the requirements of the job. Solids or reverses that tend to repeat often need all the reciprocation that can be obtained. Most jobs, however, can be inked satisfactorily with a reciprocation of  $\frac{3}{4}$ "—1". Reciprocation does, of course, mean added wear on the rubber rollers, resulting in an increased warming up of the rubber rollers and the steel cylinders. When warming up the rollers, the consistency of the ink film on the rollers changes. Thus a resetting of the ink regulation screws at the ink duct becomes necessary. So maximum reciprocation should be used only when absolutely necessary.

Illustration 35



### Operating the Automatic Wash-up

The roller-washing device is based on the principle of applying a blade to the top inking cylinder. The blade is brought into contact with the cylinder with a lever on the side frame of the inking unit on the drive side. To operate the roller washing device proceed as follows:

1. Insert the sludge basin (Illustration 36).

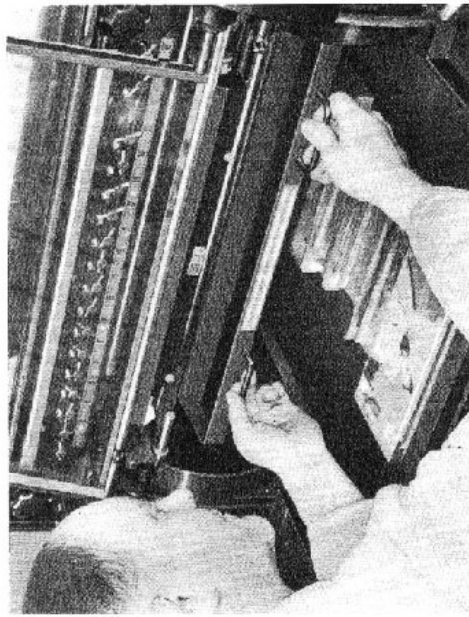


Illustration 36

2. Set the control lever at "RUN" position. The ink supply is automatically tripped provided that the lever for the ink supply is in its normal position.

3. Set the speed control at a medium speed (3000—3500 l.p.m.).

**Do not engage the wash-up blade before you have applied washing fluid to the rollers.**

4. Take the plastic tube leading from the glass container and hold the nozzle between the thumb and middle finger. Close the nozzle with the index finger so that the fluid cannot squirt out when the nozzle is below the level in the glass container.

5. Hold the nozzle above the rollers, remove index finger and allow the fluid to run on the rollers. It is advisable to clean the right half and the left half of the rollers alternately until the rollers are properly cleaned. This ensures just enough roller friction necessary for cleaning (Illustration 37).

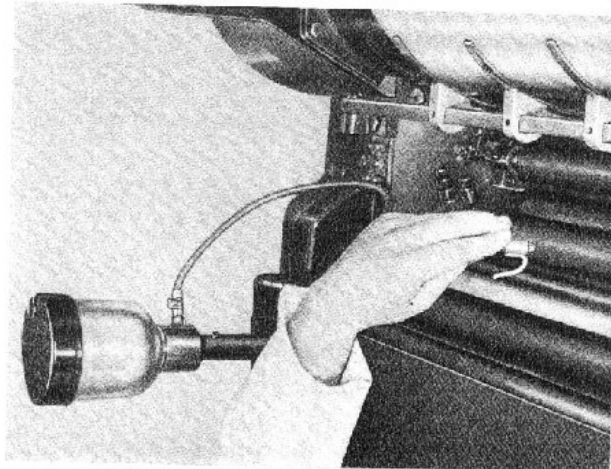


Illustration 37

6. The lever for applying the wash-up blade is positioned on the side frame of the inking unit below the cleaning fluid container. Normally, this lever is on position "ROLLER WASHING OFF". When the lever is put on position "ROLLER WASHING ON", the blade is engaged (Illustration 38).

The blade removes the ink sludge from the inking cylinder in a manner similar to a wiper blade cleaning a windshield.

7. Continue applying small quantities of fluid until the rollers are clean. Do not engage the blade to the **dry** inking cylinder.

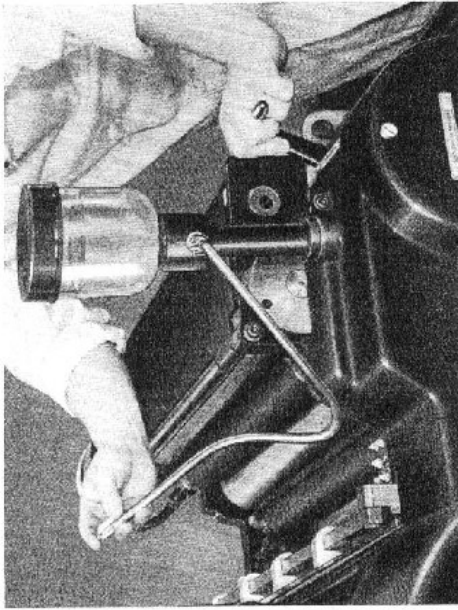
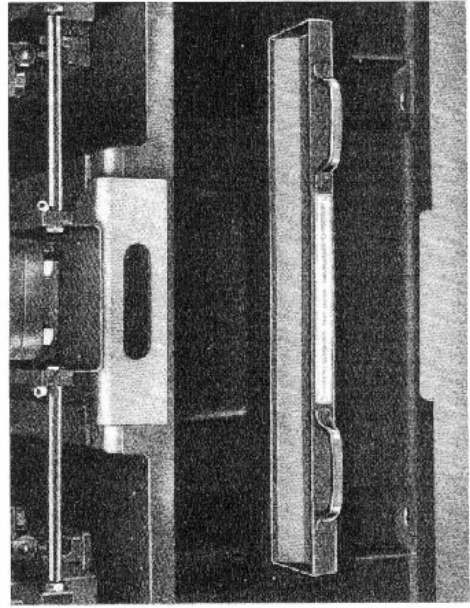


Illustration 38

8. As soon as the rollers are clean the lever is returned to the position "ROLLER WASHING OFF", and the machine stopped. The sludge basin is removed, cleaned and placed on two brackets fixed to the front end of the base below the guards for the cylinder gear racks (Illustration 39).

After wash-up the hose is returned to its hook-up position on the glass container.

Illustration 39



9. It is practical to clean the blade after each wash-up. This will prevent sludge from drying and hardening on the blade and so making cleaning difficult.

For easy cleaning, the blade can be dropped downward by pulling down a lever inside the side frame (Illustration 40). When cleaning the blade with a rag, be sure sludge does not drop on the forme, since the sludge basin is out when the blade is being cleaned.

The lever must be returned to its normal position after cleaning has been completed.

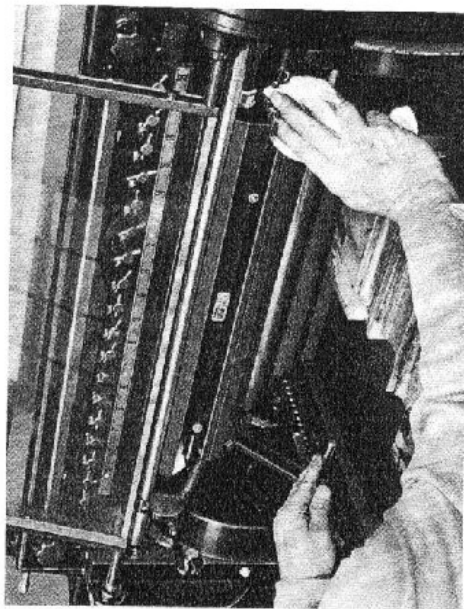


Illustration 40

After wash-up the printer merely engages the vibrator roller, runs up his ink and continues the run.

When washing-up for a colour change, say from black to yellow, the operator first washes off the black ink. He then places a little yellow ink (or, in practice, whichever ink is next on the machine) on the vibrator roller and runs up the ink until it is evenly distributed. He then washes up again.

It is advisable to reserve one set of rollers for printing the dark colours, such as blue and black. The other set is used for the lighter colours, such as red and yellow. This will facilitate roller washing and reduce the time taken for wash-up.

#### Cleaning the Duct

The ductor blade can be dropped down after unscrewing two knobs and swinging the two latches upward. The ductor roller and the ink blade are then well accessible for cleaning (Illustration 41).

Before swinging back the ductor blade, apply a drop of oil to the end faces of the ductor roller to prevent seizing on the end plates of the duct.

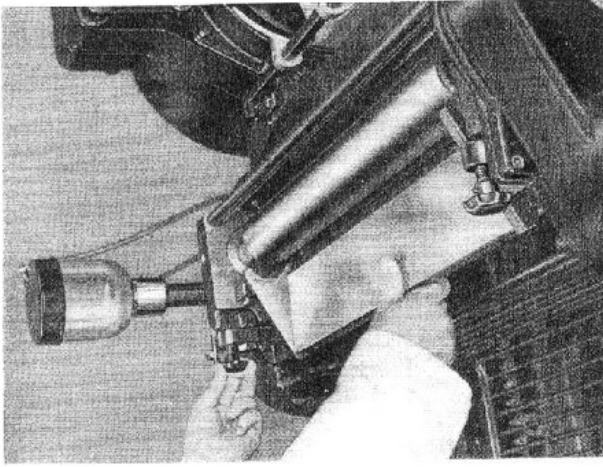
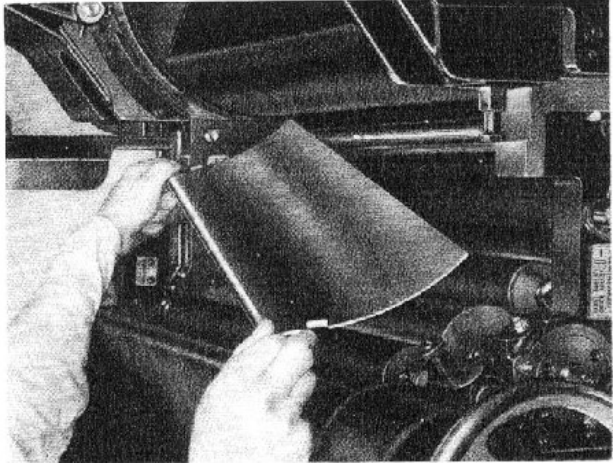


Illustration 41

Illustration 42



#### Cleaning the Splash Guard

There is a splash guard fitted between the impression cylinder and the inking system. This guard prevents ink from getting on the cylinder during the run.

The guard fits in guide rails on the drive side and operator's side. To clean, it is pulled out after raising the sheet guide bar. Removing of the splash guard is done without the use of tools (Illustration 42).

No lock or safety mechanism is necessary. Before removing the guard, stop the machine with the tympan reels toward the ink duct. Otherwise the cylinder segment gears could make it difficult to replace the guard.

### Device for Adjusting Forme

Modern printshops are increasingly demanding some system of pre-makerady. This cuts expensive idle time to a minimum and increases a printshop's earning capacity. A device for pre-registering formes is supplied on request with the Original Heidelberg Cylinder to cut make-ready time even further.

On multi-colour work or imprinting, blocks or type can be accurately positioned in the composing room by using this speedy forme positioner made of transparent plastic. If desired, we can also supply an imposing surface (composing stone) similar to the type bed in the machine. It has two bed bearers, stops at the gripper edge, and chase locks. With this imposing surface it is possible to lock up jobs with exact register outside the press room (illustration 43).

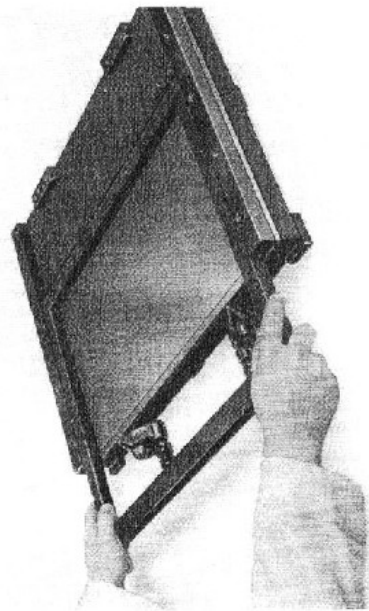


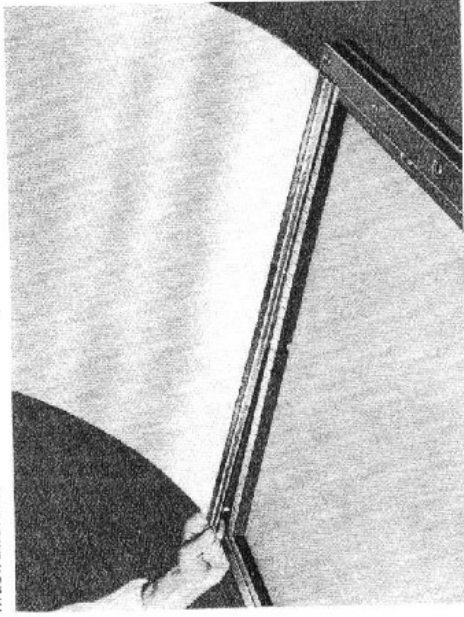
Illustration 43

Illustration 43 shows imposing surface with side bars corresponding to the bearers on the type bed of the machine, and stops at the gripper edge for securing the chase in position. At the tall end chase locks are positioned as on the type bed so that the chase — which is just being put on in the illustration — can be locked under the same conditions as in the machine. A springing of the chase when locking the forme (which possibly might affect register) is eliminated by this special imposing surface.

Two pin holes are drilled in the head bar of the chase, so that the two pins at the hinged frame of the plastic sheet can be inserted.

For the first colour the forme is positioned and locked in the chase. The forme is now well inked with black ink.

Illustration 44



After the forme has been inked the transparent sheet is brought down and an image is obtained by rubbing over it firmly (Illustration 45).

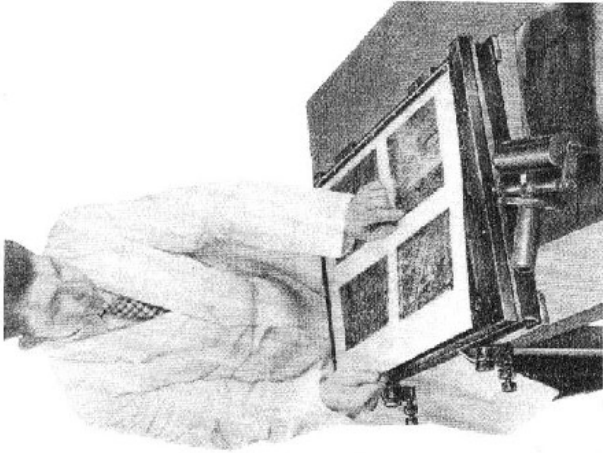


Illustration 45

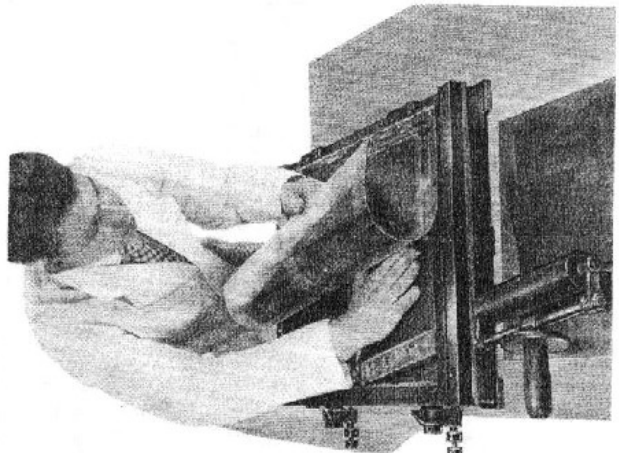


Illustration 46

The printer makes sure that all the important details necessary for registering the succeeding colours can be seen clearly. Now the second colour can be registered according to the image of the first forme (Illustration 46).

Using the same special imposing surface, precise adjustment of multi-colour work which must be printed with formes locked between bearers can also be done outside the composing room (see page 45).

### Adjusting Forme to be Locked Between Bearers

A special accessory for printing between bearers can be supplied with the OHC (see page 60).

The special imposing surface also enables the pre-makeready department to adjust with precision multi-colour work which must be printed between bearers by means of the transparent sheet. Full advantage of the maximum printing width can thus be taken.

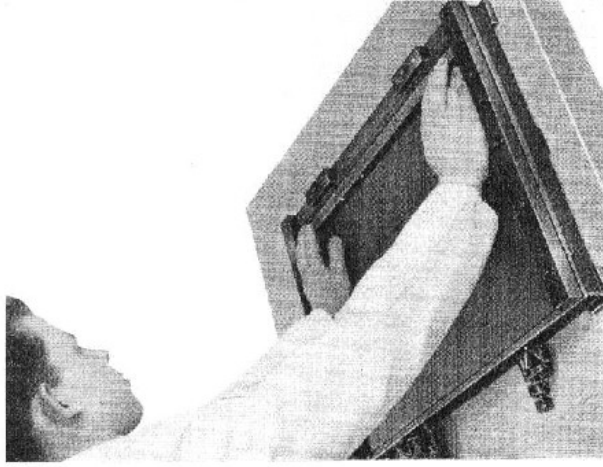


Illustration 47

Inserting the head bar which is a duplicate of the head bar of chase.

Depending on the length of the forme, the rear locking bar is inserted in one of the slots in the bearers.



Illustration 48

If the forme covers the entire printing area, the rear locking bar is inserted in the recessed slots of the bearers, nearest to the chase locks which are also tightened. The correct locking of a forme between bearers is described on page 60.

The image of the forme is transferred to the transparent sheet.

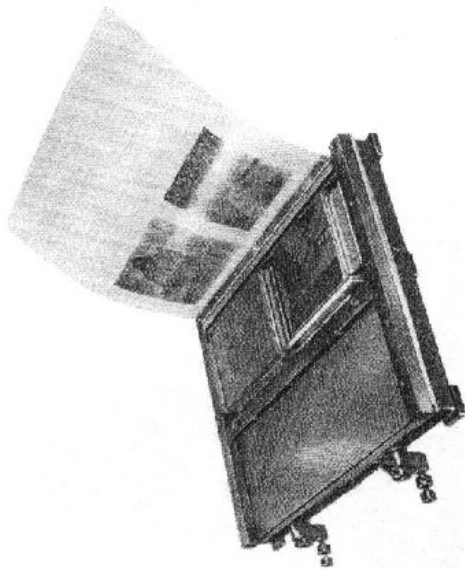


Illustration 49

After unhooking and loosening the rear locking bar, the forme is slid onto the imposing board and can be carried to the machine.

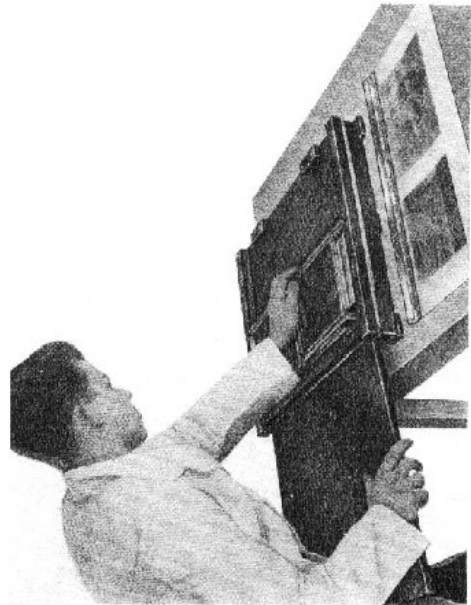


Illustration 50

### Locking Chase on the Bed

The bed must be in front dead centre position on the inking end. To lock the forme on the bed, use the metal imposing board which is furnished with the machine. When the forme is on the bed and the imposing board is removed, loosen all quills in the forme and raise the two chase locks which secure the chase onto the bed (Illustration 51).

The two side bars of the chase have two round-headed screws, and when adjusted will contact the bearers to prevent the chase from springing when it is locked. These screws also make it possible for the chase to be replaced on the bed in dead register if it has to be removed at any time during a run (Illustration 52).

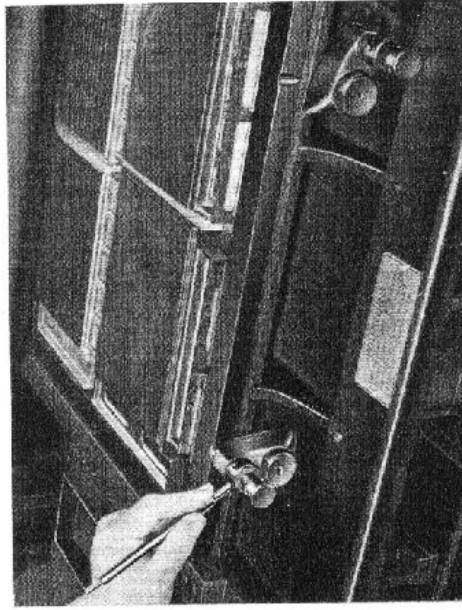
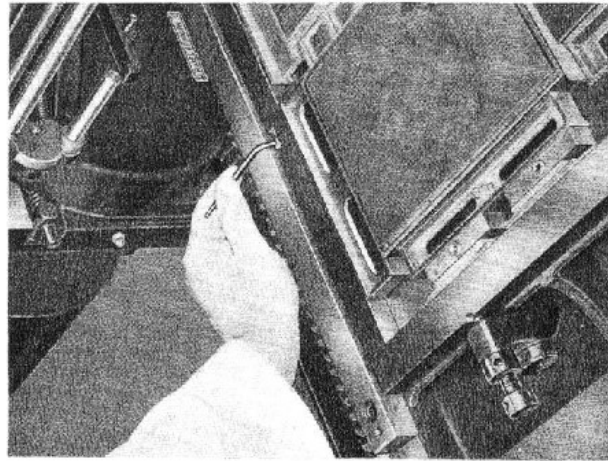


Illustration 51

Do not force the screws when adjusting them against the bearers. Merely adjust them to a firm fit. The screws eliminate the dangerous practice of inserting leads or strips of furniture between chase and bearer to counteract chase expansion (Illustration 52).

If the chase has to be removed from the bed after register has been obtained, or during a multi-colour job, only one of these set screws should be loosened. The other acts as a guide, and helps to register the forme when it is replaced on the bed.

Illustration 52



After the one screw has been readjusted against the bearer, the forme can be planed down and relocked.

### Composition of Cylinder Packing

Opinions vary on the make-up of the cylinder packing, as they do on positioning and methods of make-ready. No set rule for packing can apply for all jobs and for all cylinder presses. Under actual working conditions the hard packing without rubber blanket has proved most valuable for line and type formes and the medium-hard packing for mixed formes of type matter and blocks and for outspoken plate formes.

All sheets of the packing should have a 90 degree fold of about 1" at the head, so they can be inserted into the clamping bracket easily and accurately. **No loose sheets should be inserted in the packing.** A stock of all sheets cut to size for the cylinder should be kept on hand so the minder always has uniform materials available especially when operating more than one Original Heidelberg Cylinder.

### B. Medium-Hard Packing for Mixed Forme of Type Matter and Blocks

1. 1 Manila top sheet, pulled tight by draw bar.
2. 1 Manila sheet, loose end.
3. 1 Heidelberg press blanket of .012" (0.3 mm).
4. 4-5 M. F. printing sheets, loose end.

5. 1 Manila sheet for fastening of make-ready, loose end.

6. 1 ivory board, approx. .008" (0.2 mm), loose end.

The sheets of M. F. printing (approx. .002" each) which are above and below the make-ready, should be torn out when the packing becomes too bulky due to the make-ready.

We recommend ivory boards for packing, since this board is supplied in an even thickness. Boards of varying thicknesses cause unnecessary make-ready.

In packing the cylinder, use only the best grade of Manila paper that can be stretched tightly without tearing. We recommend always cut Manila sheets (.003" to .004" — 0.08 to 0.1 mm) in the correct size. This will save time and money. Always test paper thickness with a micrometer, type gauge or pacer caliper. The prescribed packing thickness is approx. .047", including a sheet of the stock to be run.

We recommend that the make-ready be pasted to the Manila sheets. Manila sheets have a smooth surface, with no tendency to creep, as in the case of a rough-surfaced paper.

### A. Hard Packing for Type Matter, Tabular Work and Line Etchings

1. 1 Manila top sheet, pulled tight by draw bar.
2. 1 Manila sheet, loose end.
3. 6-7 M. F. printing sheets, approx. .002" each (40-50 gr/sq m.), loose end.
4. 1 Manila sheet for fastening of make-ready, loose end.
5. 2 ivory boards, approx. .008" each (0.225 mm), loose end.

### The Heidelberg Press Blanket

A word on the use of the Heidelberg press blanket.

The Original Heidelberg Cylinder has a maximum packing thickness of approx. .047". The rigidity of the impression mechanism requires a small degree of elasticity in the packing. The Heidelberg blanket supplied as standard equipment is not a soft rubber blanket but consists of two layers of silk batiste cloth of approximately .010"

thickness. Since the packing thickness of .047" is considered "hard", the use of this blanket will be sufficient to yield the required elasticity in packing. Contact your Heidelberg agent when it is necessary to replace the blanket. The Heidelberg blanket is hemmed at one end for passage of a rod that secures it to the front edge of the cylinder by means of three hooks (Illustration 54). The blanket is drawn taut by the tympan draw bar.

### Clamping the Packing

The paper guard over the cylinder is raised so that the cylinder is freely accessible. Then the top lid of the duct is laid over the rollers, so that the ink does not smear the sheets of the packing. The exceptional size of the cylinder facilitates

clamping considerably. The clamp, with the cylinder grippers, is opened by turning a single handwheel. The creased cylinder packing is easily inserted, and securely clamped with a few turns of the handwheel (Illustration 53).

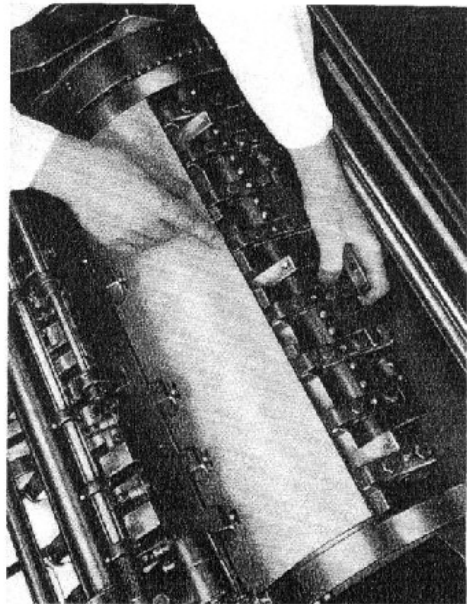
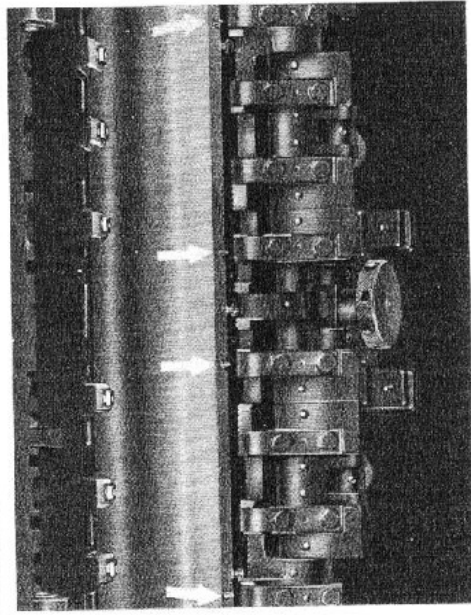


Illustration 53

Some printers feel that pins in the cylinder are essential, so a set of four is furnished with the machine. They can be inserted in the cylinder front edge (Ill. 54). However, it is perfectly safe to work without them. The printer should decide on their use at the time the machine is erected. Heidelberg's agents will install them, if desired.

Illustration 54 also shows the three hooks used to secure the blanket and the four packing pins.

Illustration 54



When the packing is secured in the clamp, the machine is inched with the control lever, until the two draw bars are accessible. The blanket is stretched on the first bar and the top sheet of Manila on the one above. Both bars can be easily tightened with a pin wrench. When the packing is to be released, a turn of the release bolt lifts the ratchet pawl and the bar is free (illustration 55).

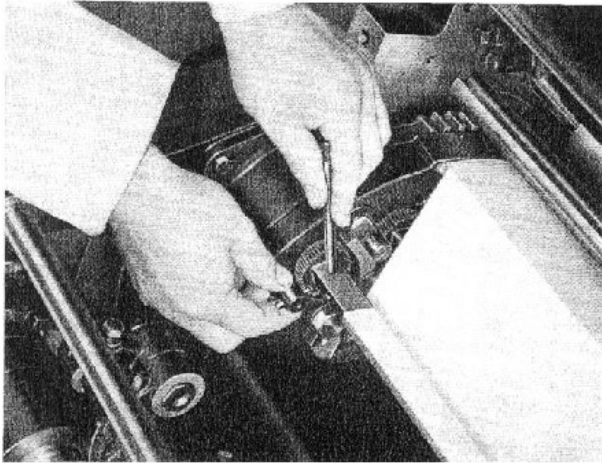


Illustration 55

### Make-ready

The massive cylinder, free from deflection, reduces make-ready to a minimum. Make-ready is confined to correcting inaccuracies in the forme, and in the case of a halftone, bringing out highlights. Whether the printer uses a chalk relief make-ready, a Primaton make-ready or a 3 M one, does not matter. The machine will show a marked reduction in make-ready time. Every tissue is fully effective.

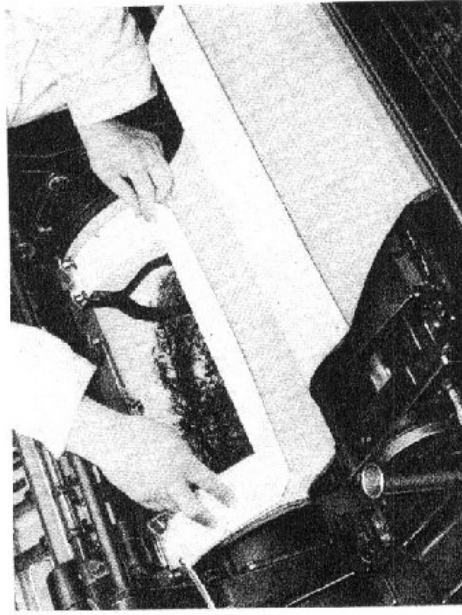


Illustration 56

Illustration 56 shows pasting of the make-ready on the Manila.

The top Manila sheet and the rubber blanket have been put over the guards of the inking unit. The top lid of the ink duct can be put over the inking rollers and thus the Manila sheet cannot contact the rubber rollers.

The top Manilla and the blanket are put back on the roller guard to prevent contact with the rollers. The top lid of the duct when lowered over the rollers forms this guard.

When used for halftones, the blanket should be placed on top of the make-ready to obtain a small degree of elasticity in the packing. Position of the blanket in make-ready is of great importance. It should not be directly beneath the top sheet, but inserted further down in the packing or under the second Manilla. Because of its solid construction, the Original Heidelberg Cylinder has many advantages not found in other machine packing. Make-ready, and printer suggestions concerning packing, make-ready, and forme adjustment.

### Cylinder Brush Adjustment

The cylinder brush holds the sheet flat against the cylinder, and prevents paper or spray dust from falling on the forme.

The action of the brush is controlled. It moves away from the cylinder to allow the cylinder grippers to pass and returns to the cylinder when the front edge of the sheet has passed.

Regulation of the brush pressure is carried out with a hand control lever.

This control lever has three positions:

- (a) Brush Off,
  - (b) Brush On — Medium,
  - (c) Brush On — Full
- (Illustration 57).

The brush must be used for all close register work, especially process jobs. For example, when printing the second colour of a four-colour process job and the ink is not quite dry, the pressure of the brush can be eased to avoid marking. However, on most jobs the brush can be used with full pressure. The brush comes in contact with the sheet before impression begins, so that the sheet does not sag and touch the forme.

### Replacing the Brush

After a period of time the bristles become worn and the brush must be replaced. A new brush can be secured from your nearest Heidelberg agent.

Illustration 57



### Cleaning the Brush

The brush must be cleaned periodically. This is a simple operation. Turn the press over to front dead centre position. Move the control lever to position "OFF" and remove the two extended bolts on the operator's side which hold the brush (Illustration 58).

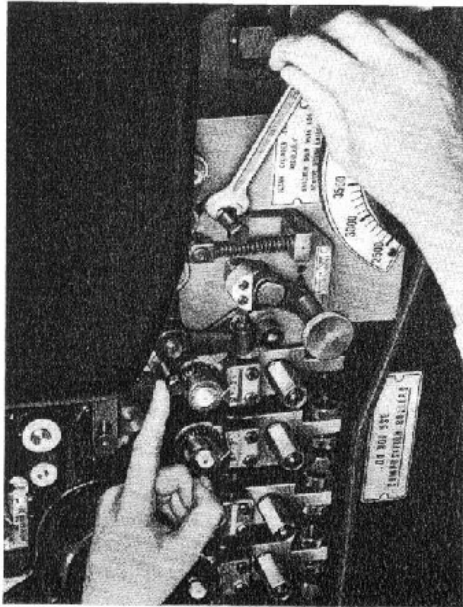


Illustration 58

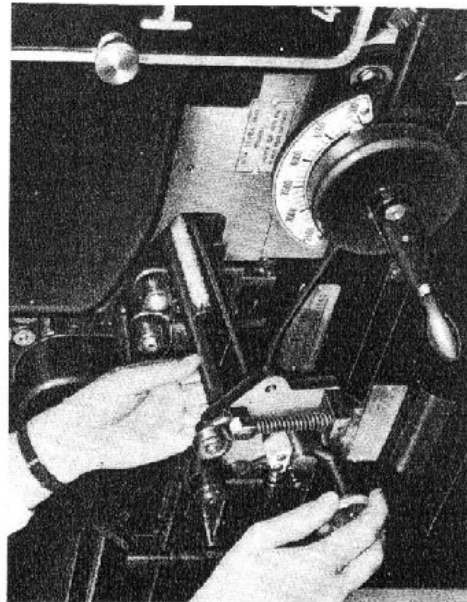


Illustration 59

The brush should be cleaned daily when operating the non-offset spray gun.

### Guidance of Sheet in the Delivery

With very thin papers it is necessary to guide the sheet over its full length in the delivery; otherwise the sheet may collapse.

To prevent this, adjustable sheet brakes can be mounted on the square bar in the delivery. When processing thin papers these sheet brakes can be placed against the sheet to be delivered (Ill. 60). Thus the sheet gets good guidance in delivery. When processing heavier papers or board the suction air for the sheet brakes is cut off.

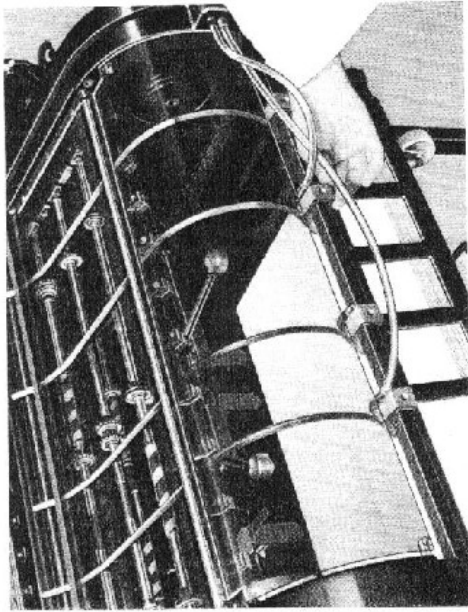


Illustration 60

In the K line master manual are listed all those extra accessories available for the various K line models. In this supplementary manual we cover only those extra accessories which can be used on the Original Heidelberg Cylinder.

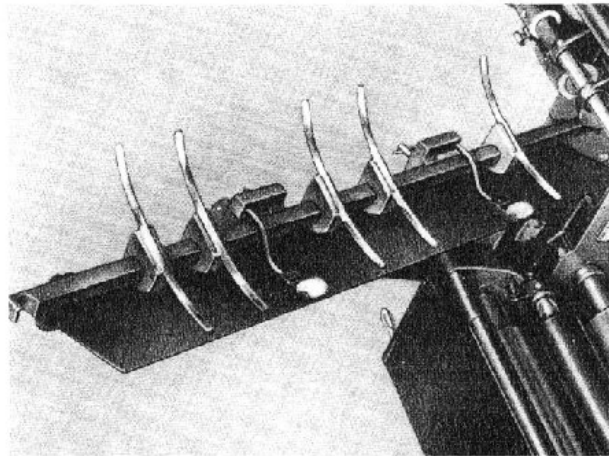
### Brushes for Onion Skin and Thin Papers

As every printer knows, there are papers which tend to sag just before actual printing begins. This may affect register, particularly with line and rule formes.

Should a printer be using such papers regularly, his extra accessory will be useful.

The device consists of two small brushes mounted on the sheet guide bar in front of the impression cylinder (Illustration 61).

Illustration 62



These brushes keep the sheet snugly to the packing, and thus prevent sagging before actual printing takes place.

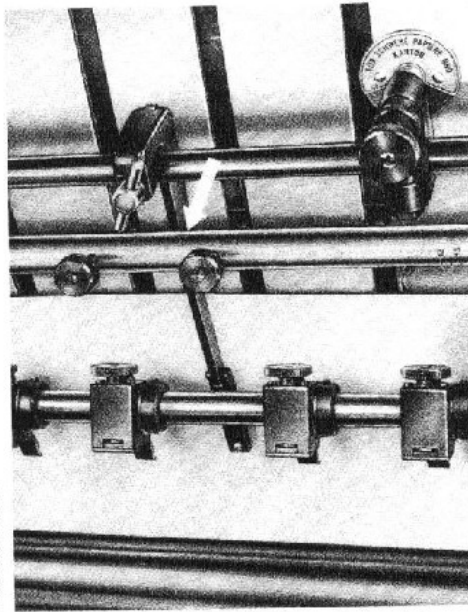
The brushes are positioned slightly outside their holders, in order to allow exchanging for smaller and larger sheet sizes. So the brushes have to be exchanged according to the sheet size, i.e. with a larger sheet size the brush holder must be mounted to bring the brush outside. With a smaller sheet size mount the holder to bring the brush inside (Illustration 62).

### Cardboard Sheet Guide

Some printshops regularly process heavy and, in particular, stiff cardboard. To ensure favourable transfer conditions from the transfer grippers to the cylinder grippers for such materials, a special cardboard sheet guide is available as an extra accessory.

The cardboard sheet guide is mounted to the same bar to which the sheet smoothers are clamped, above the curved aluminium feed board (Illustration 63).

Illustration 63



When mounting the cardboard sheet guide, the lower part with the two rolls should be slightly off the aluminium feed board. The rolls then press the sheet downward when it passes. On the upper face of the sheet guide a stop screw has been fitted which is already set for the proper height. It will touch the side lay bar from beneath (arrow).

### Device for Locking Forme between Bearers

To print the maximum width a special device for locking formes between bearers is available on request.

The normal chase is substituted by two bars that fit at the head and tail of the type bed. The head bar is an exact duplicate of the head bar of the chase and is merely placed into position against the stops on the type bed. The tail bar fits into one of the slots in the bearers and is locked into position with a key. Laterally, the form is locked against the bearers with ordinary quoins. If the tail bar is placed at the very end of the type bed, the chase bolts are put into their

locking position and tightened as they are with a chase.

The plastic pre-registering device can be used on the head bar exactly as on a chase. Exact positioning can be done outside the press room (also see page 46).

The forme is placed on the type bed by using the imposing board.

Illustration 64 shows a forme locked between bearers.

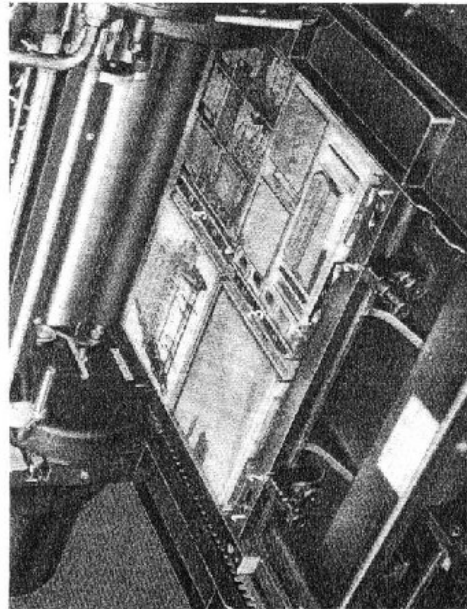


Illustration 64

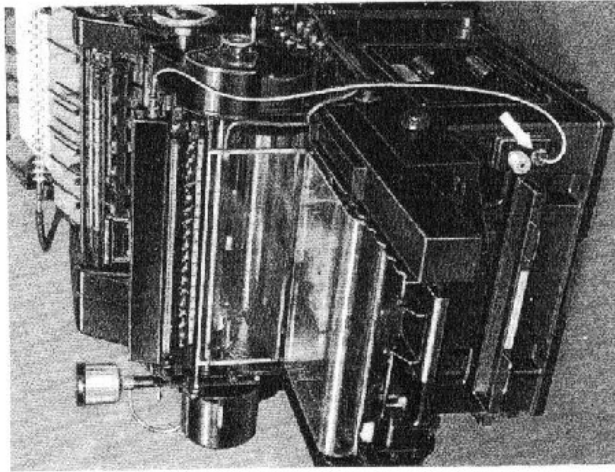
When locking up, proceed as follows:

1. Slide head bar squarely into position on type bed.
2. Put the chase bolts into position when the tail bar is at the end of the type bed (also see page 47).
3. Lock the tail bar in the grooves of the bearers.

### Device for Carbon Printing

Until recently, the production of copy pads, duplicating books etc. was carried out only by special machines and presses. The Original Heidelberg Cylinder does not replace such machines, for there are pertinent technical factors to be considered. There are, however, numerous carbon printing jobs of comparatively short runs which can be economically handled on platen or cylinder presses.

Illustration 65



### Imposing Surface for Adjusting Forme

We can also supply a steel imposing surface for the Original Heidelberg Cylinder. It has side bars corresponding to the bearers on the type bed of the machine, and stops at the tripper edge for securing the chase in position. With this imposing surface it is possible to lock up jobs with exact register outside the press room. Use of the imposing surface was discussed on page 42.

A unit can be furnished for heating the ink when using the Original Heidelberg Cylinder for carbon printing. **Carbon inks contain wax. Therefore, it is necessary for the duct to be warmed while the machine is in use to ensure free flow of the carbon ink from the duct to the vibrator roller.**

The apparatus is simply plugged into the electric supply and placed on the duct. The machine is then ready for carbon printing. The plug is mounted to the press base on the inking end (see arrow in illustration 65). The device is supplied with an automatic fuse.

### Numbering on the Original Heidelberg Cylinder

When going off impression, the cylinder is lifted about .055". When numbering with plunger-operated numbering machines, only numbering boxes with a plunger lift below .048" (= 1.2 mm) should, if possible, be used, to prevent the plungers from contacting the cylinder packing. The lower the plunger height, the better the results. Furthermore, low plunger machines are far less damaging to the forme rollers.

There are numbering boxes on the market today with a plunger lift down to .036" (= 0.9 mm). Check with your Heidelberg agency for full details.

Usually, plunger-operated numbering boxes are supplied with small steel plates, to be pasted to the cylinder packing. These plates prevent marking of the cylinder packing.

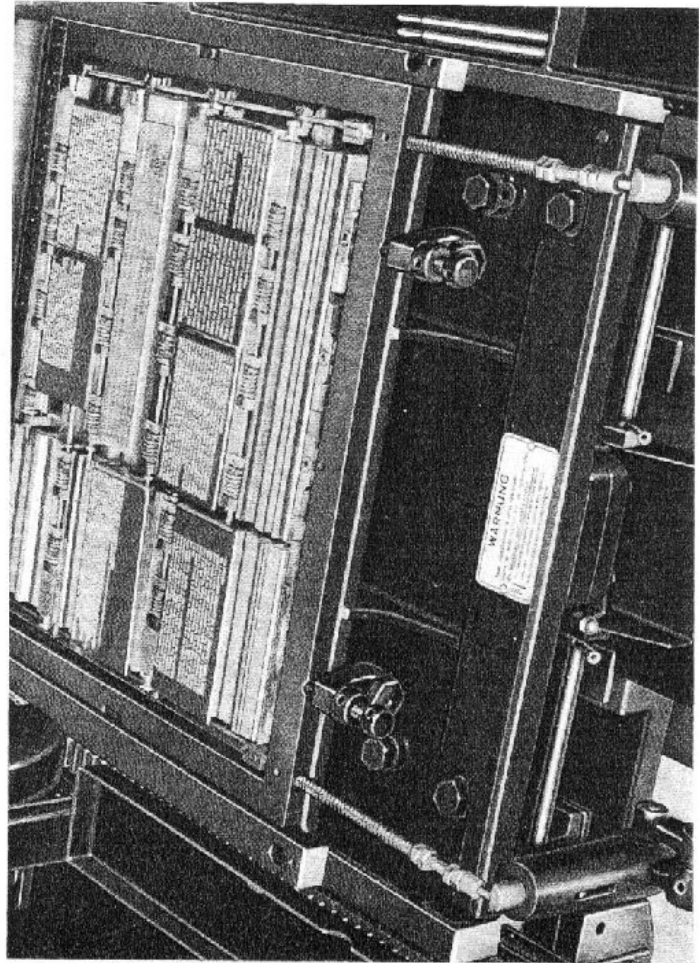
### Numbering with Centrally Operated Numbering Machines on Original Heidelberg Cylinder

For jobs that require several absolutely reliable numbering machines for instance when printing security papers, we recommend our centrally operated numbering device.

For this method, the Heidelberg Cylinder chase is fitted with moving rods which centrally operate all the numbering machines in the forme, obviating the need to purchase expensive numbering chases of special design. With the Heidelberg chase, the numbering machines can be locked up with ordinary quoins, and type matter and numbering machines can be worked together in one forme. To operate the moving rods stops are fitted to the machine which automatically cut out when the machine is running off impression (illustration 66).

It is possible to operate two moving rods simultaneously with the extra accessory supplied by us, so that the numbering machines can be built in lengthwise and across to the impression cylinder. This also allows the use of numbering machines of different sizes and with different liftings. Printers interested in numbering on their Heidelberg cylinder presses should communicate with their Heidelberg agent for full particulars.

Illustration 66



### Special Chases for the Original Heidelberg Cylinder

Standard equipment includes one standard chase, plus a standard chase with centre bar. If desired, the following special chases can also be supplied:

1. Skeleton chase with centre bar.
2. Skeleton chase with centre bar and built-in quoin.
3. Standard chase with centre bar, for gripper margin of  $\frac{1}{4}$ " instead of the normal  $\frac{5}{16}$ ".
4. Standard chase without centre bar, for gripper margin of  $\frac{1}{4}$ " instead of the normal  $\frac{5}{16}$ ".
5. Skeleton chase with centre bar for gripper margin of  $\frac{1}{4}$ ".
6. Skeleton chase with centre bar and built-in quoin, for gripper margin of  $\frac{1}{4}$ ".

No alterations whatsoever are necessary on the machine to use the chases described under item 3-6. The gripper margin and not the gripper bite is reduced. The construction of the head bar of the chase moves the printing line closer to the edge of the cylinder grippers. It is recommended that the narrow margin chases be used only when absolutely necessary.

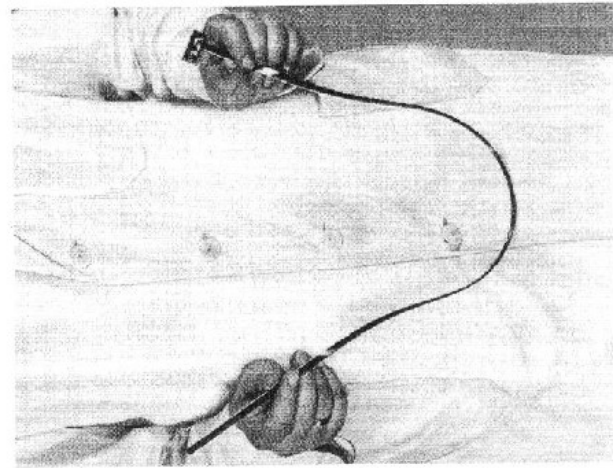


Illustration 67

### Sheet Guide Band for Heavy Board

Often, board or heavy paper must be printed on the machine. These stocks may have the unfavourable characteristics of feed edges curved downward or upward. There are also jobs where the printing must be almost up to the leaving edge of the sheet. On such jobs the rear edge of the sheet may touch the forme, resulting in "tail slur", namely curving the transfer of the sheet from the cylinder grippers to the delivery grippers.

Such difficulties can be prevented with our sheet guide band, which is available as an extra accessory. Illustration 67 shows this guide band, which at one end is fitted with a holder into which the steel band is clamped. On the other end, the band is painted red, marking the normal band length.

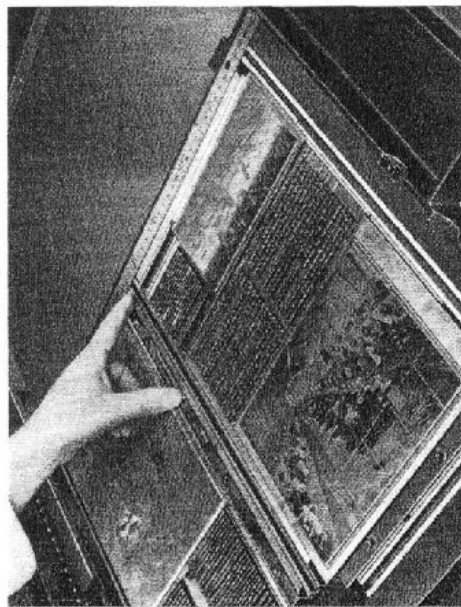


Illustration 68

Since the sheet guide band can only be positioned over print-free gutters that run through the entire forme, check the number on the scale of the chase. If the print-free channel is in the centre of the sheet to be printed, one steel band will be sufficient. However, if there are only 2 print-free margins on each side of the sheet, 2 steel bands are required. It is for this reason that this extra accessory is supplied with 2 sheet guide bands.

The width of the sheet guide band is abt.  $\frac{1}{8}$ " (6 mm). The print-free margin, therefore, should be at least  $\frac{3}{16}$ – $\frac{15}{32}$ " (10–12 mm).

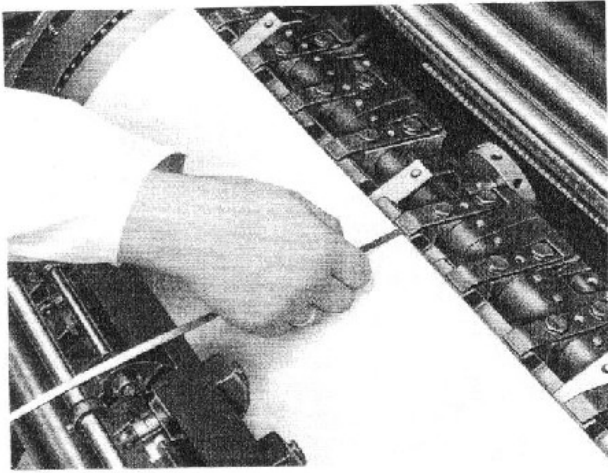


Illustration 70

For fitting the sheet guide band, proceed as follows:

Clamp the red-marked end of the sheet guide band into the cylinder gripper closest to the print-free margin (see number of scale on splash guard). The red mark on the band must be clamped-in face down so that the red marking can no longer be seen from above. This is very important, otherwise the sheet band may be turned when beneath the cylinder.

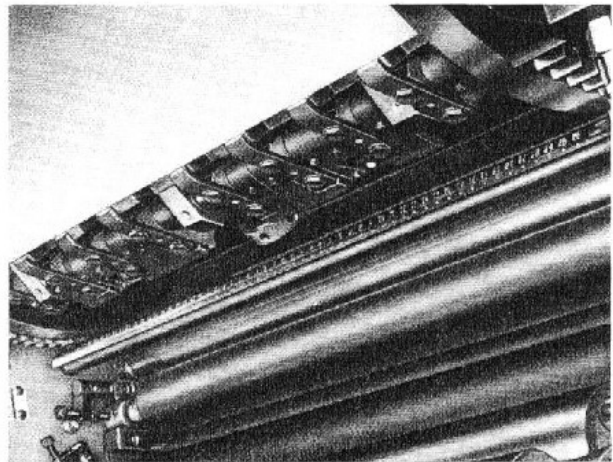


Illustration 69

The splash guard in front of the impression cylinder has the same scale as the one on the chase, facilitating proper positioning of the sheet guide band in accordance with the print-free margin in the forme.



Illustration 71

The printer now holds the other end of the sheet with the holder in his hand and inches the machine forward, bringing the red-marked end which is clamped in the cylinder gripper towards the delivery.

Now mount the holder to the splash guard. There is a red mark on the holder which corresponds to the position of the sheet guide band. Adjust the red mark to the corresponding number on the splash guard which in turn has to correspond to the position of the print-free margin. After mounting the holder to the splash guard, tighten the screw with a screw-driver, as shown in illustration 72.

On the clamping bar in the feeder there is another scale provided which corresponds to the scale on the splash guard. Put the end of the sheet guide band beneath the clamping bar. The red mark now faces upward. Pull the sheet guide band until the end of the mark lines up with the edge of the clamping bar. The position of the band must, of course, correspond to the figure on the splash guard. The red mark on the end of the sheet guide band indicates the proper length of the band, so that the free passing of the sheet is not impaired.

Actual clamping of the end of the sheet guide band beneath the clamping bar is made by pulling in and tightening 2 hexagon head screws to the right and to the left of the sheet guide band.

After the sheet guide band has been properly mounted it is advisable to run a few sheets through, to check that the band does not mark the top of the sheet.

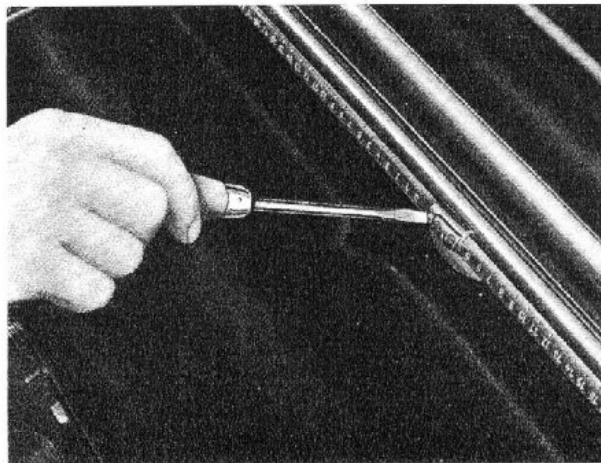


Illustration 72

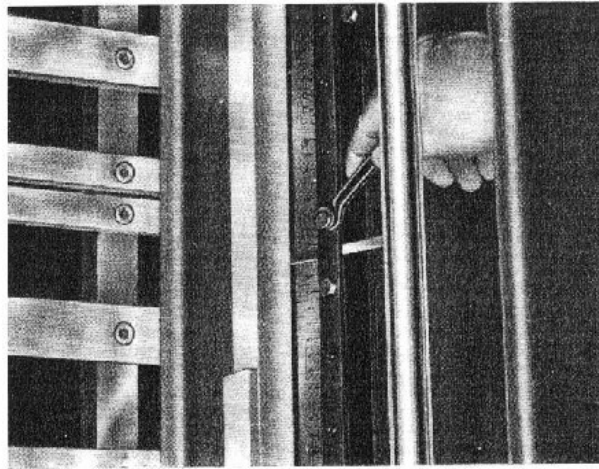


Illustration 73

### Die-Cutting, Scoring, Creasing and Slitting on the Original Heidelberg Cylinder

The massive, impressional strength and size of its cylinder enable the Original Heidelberg machine to be used also for die-cutting, suitable material permitting. Of course, board material which is not flexible and does not adapt itself to the round forme of the cylinder cannot be processed. For those firms which regularly die-cut, in particular packaging materials, the cutting and creasing machines are especially valuable.

Various hints for die-cutting on the Original Heidelberg Cylinder are given below.

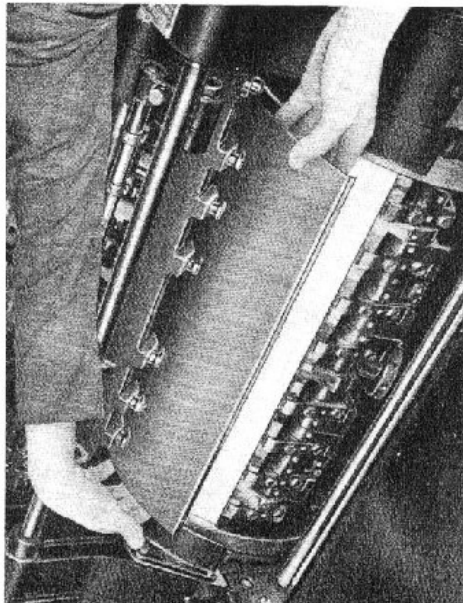


Illustration 74

This jacket is curved to fit the cylinder, and the front edge forms a right angle for clamping. This angled edge also has holes to correspond with the pins in the clamping edge of the cylinder, for proper positioning and mounting.

A strong canvas strip is rivetted to the tail end of the jacket, and is wound around the rear tympan bar and drawn tight.

For die-cutting formes the standard band steel cuts fitted into plywood plates are used. These are supplied to your instructions by specialist firms.

Furthermore, we recommend the use of a hardened steel plate of 1 mm thickness **beneath** the die-cutting forme, for the protection of the type bed. This plate will prevent the hard and narrow band steel cuts from entering into the type bed, and is also used for gluing the required make-ready **beneath the die-cutting forme**. Make-ready is thus facilitated and sped up considerably.

**When no steel plate is used beneath the die-cutting forme, the cutting rules must be ordered type high.** We draw your attention to this point, since the die-cutting rules for die-cutting platens are normally supplied slightly above type high. Such rules, however, are not suitable for use on cylinder printing presses. Not only would the alignment between the cylinder and the forme be incorrect, but the higher rules would damage the surface of the type bed.

**When using a steel plate under the forme, the die-cutting rules must be reduced in height by .040" (1 mm) to correspond to the plate thickness.** A printer may have jobs which need only to be scored. Your Original Heidelberg Cylinder can handle this work satisfactorily. The principles of scoring are identical to those of die-cutting, with the exception that the steel rules will not cut through the sheet. This is achieved by reduction in the packing and consequently in the impression. Scoring can only be performed with steel cutting rules in the flat forme.

Creasing is another field where the Original Heidelberg Cylinder can be used. For such jobs a corresponding forme with creasing rules is used (1 or 2 point face rules) or if die-cutting and creasing is to be done at the same time, as in the production of folding boxes, the die-cutting forme will also hold the creasing rules.

On the pages 74 and 75 we discuss perforating on the Original Heidelberg Cylinder with our perforating device.

Apart from slitting and creasing, other types of perforation can be undertaken on the Original Heidelberg Cylinder. Information may be obtained from your Heidelberg agent.

#### Device for Hot Embossing

The unyielding impression strength and rigidity of the Original Heidelberg Cylinder makes it very suitable for heavy embossing.

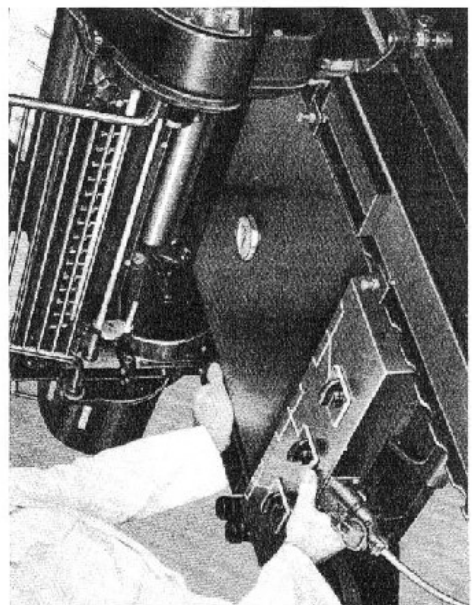
With due care in make-ready, the Original Heidelberg Cylinder can emboss at an average speed of 4000 i.p.h. A special device has been designed for hot embossing. It consists of a heater with infra-red elements which heat the forme from 160 degrees to 200 degrees Fahrenheit (70-90° Celsius).

Hot embossing is preferable to cold embossing because:

1. The paper, especially brittle stock, does not easily break at the outline of the embossing.
2. The embossed outlines are sharp and the design remains permanent, even when sheets are stored in large piles over a long period of time.
3. On bronzed prints the lustre of the bronze is enhanced. The bronze powder must not be too fine.
4. Bronze prints do not rub off as easily as on cold embossing.

Illustration 75 shows the Heidelberg special heating apparatus being positioned over the embossing forme on the gear rack guards.

Illustration 75



When hot embossing, it is necessary to place a sheet of aluminum foil between the forme and the type bed. This insulates the type bed from excessive heat, which could cause serious damage to the machine. To further prevent this, lubricate the sides of the guide rails for the type bed with a grease having a high melting point. Such grease will not liquify at high temperatures. Under no circumstances should oil be used.

Cold embossing can be carried out on the Original Heidelberg Cylinder without special devices.

### Perforating and Cutting on the Original Heidelberg Cylinder

A special device has been designed for perforating, creasing and slitting on the Original Heidelberg Cylinder. The present sheet guard bar is replaced by a reinforced bar to maintain absolute rigidity during perforation. This bar is affixed with the hexagon bolts supplied with the device. Remove the 2 bolts with which the sheet guard bar is fitted. Store these bolts carefully along with the removed sheet guard bar so that they are available when needed later.

The reinforced perforation bar can be swung upward also.

In normal perforating work standard steel bands of  $1/4$ " in width are used. ( $1/8$ " steel bands can be supplied on special order only.) The steel band is secured at the gripper edge by the packing clamp.

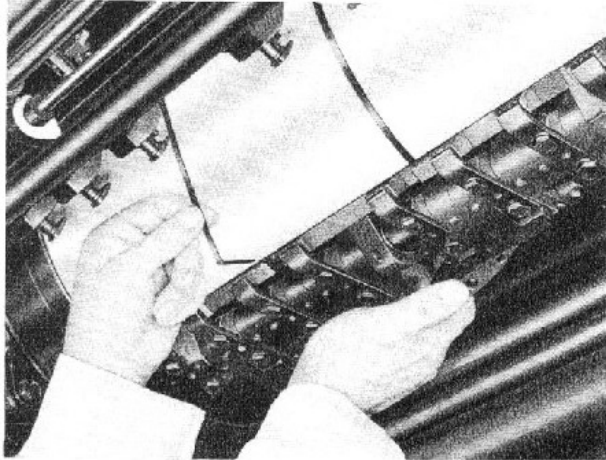
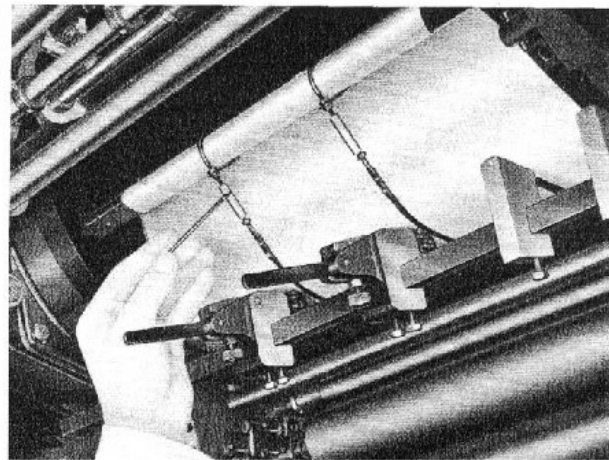


Illustration 76

Illustration 77



The bracket of the perforating wheel is mounted on the steel bar which carries the new sheet guards. The perforating device is secured by two screws in any desired position. Several perforators can be used simultaneously. The minimum distance between perforating wheels is  $13/8$ ".

The perforating wheel is adjusted to the steel band with an adjusting screw on top of the bracket (see arrow). The long lever must be down when making this adjustment. (Perforation on.) Adjustment must be made in such a way that the perforating wheel is rolling evenly on the steel band and is not positioned too low. To disengage the perforator, the lever is raised to its vertical position so that the perforating wheel is drawn back from the steel band. When continuing the perforation, the lever is simply lowered. In addition to this extra accessory, a brush is supplied which will extend over the whole width of the cylinder. This brush is also mounted on the bar. It serves to smooth the sheet before perforation begins, and assures even perforation at the edges of the sheet. We recommend the brush for smoothing the sheet even if perforation is done only in the centre.

The brush is fastened with 2 countersunk screws. Close contact of the brush to the cylinder can be regulated with a lever (see arrow). Loosen the two hexagon screws with the wrench furnished with the machine. This will release the spindles in their bearings, and they can be turned by the lever. After the brush has been brought to the desired position the hexagon screws will be secured. This way it is free of contact with the cylinder without removing the brush from the machine. When slitting is desired, the perforating knives can be replaced with slitting knives. Slitting and perforating can be done simultaneously.

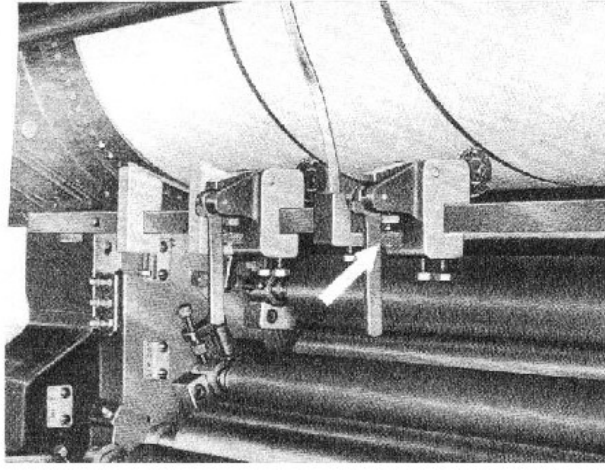


Illustration 78

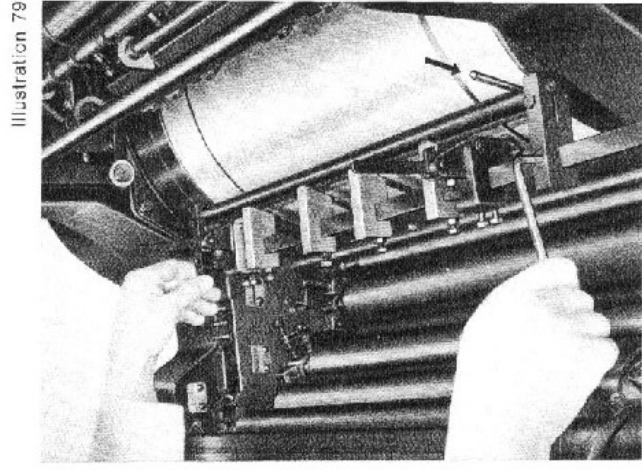


Illustration 79

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