

**ORIGINAL HEIDELBERG
CYLINDER $22\frac{1}{2} \times 30\frac{1}{4}$ "/ $22\frac{1}{2} \times 32\frac{1}{4}$ "**

OPERATION MANUAL



**HEIDELBERGER DRUCKMASCHINEN
AKTIENGESELLSCHAFT**

SALES AND SERVICE THROUGHOUT THE WORLD

THIS BOOK SHOULD BE KEPT IN THE MACHINE ROOM

The operation of the Original Heidelberg Cylinder $22\frac{1}{2} \times 30\frac{1}{4}$ " and $22\frac{1}{2} \times 32\frac{1}{4}$ " is very simple. A proof may be seen in the fact that by the end of 1967 approximately 45 000 Original Heidelberg Cylinders had been installed all over the world and enthusiastically received.

The purpose of this instruction manual is to enable printers to obtain the maximum advantage from the machine. We hope that it will not only ensure thorough maintenance of the machine but will promote a better understanding of progressive methods in preparation of the forme and make-ready, the use of inks and the care of rollers.

By following our advice, tested and proved the world over, the printer will obtain the maximum efficiency from his Original Heidelberg Cylinder.

**HEIDELBERGER DRUCKMASCHINEN
AKTIENGESELLSCHAFT**

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Table of most important adjustments for various stock

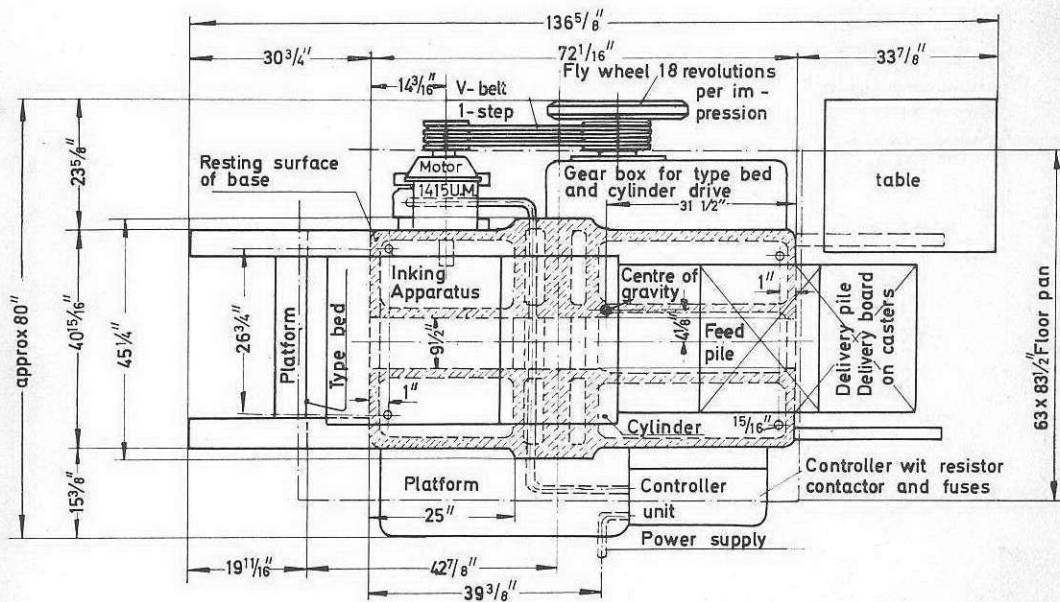
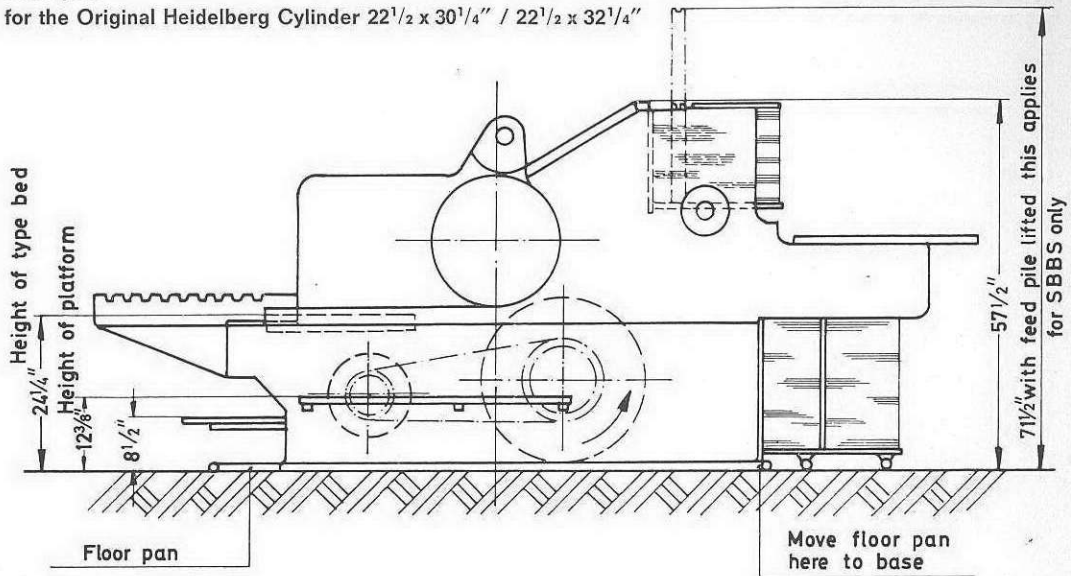
This table can only give the approximate adjustment. Maximum production speed on each run depends upon paper, size, and ink. The experienced printer will, therefore, make minor adjustments as the run proceeds until he has obtained the highest possible running speed.

Adjustments	Air-Mail and Thin Paper	Medium-Weight Bond	Cardboard
Distance of Feed Pile from Suckers	Top sheet approx. $\frac{1}{2}$ " (12 mm) from suckers	Top sheet approx. $\frac{1}{4}$ " (6 mm) from suckers	Top sheet directly under suckers
Sucker Bar Tilt	Usually use plenty of tilt, but there are thin papers which can be run better without tilt	Tilt indicator in centre position	No tilt. Indicator on "Cardboard"
Paper Feed	Paper feed indicator on or near "Thin Paper" setting	Indicator in centre position	Indicator on or near "Cardboard" setting
Paper Separation	Place red side for thin paper on suckers 90° separator springs as far out as possible	45° separator springs as far out as possible	Place rubber discs on suckers. Retract front separator springs, instead place side separator springs extending slightly over edge of pile
Feed Air Blast	Reduce air blast. Blower in top position	Medium to full air blast till sheet flutters. Blower in middle position	Full air blast. Blower in lowest position
Delivery Air Blast (Air blast motor, the air flow of which is controlling the sheet when transported to delivery pile)	Reduce air blast more or less all the way, depending upon paper size and printing speed	Medium to full air blast	Little air blast necessary.
Delivery Air Blast directly above the delivery pile	Reduce air blast depending upon paper size and printing speed	Medium to full air blast so that the sheet falls quickly down on the pile	Full air blast
Cylinder Brush	Engage lightly in 1st position	Brush engaged in centre position during the first run. During the following runs engage brush as required	Brush fully engaged

Specifications for the Original Heidelberg Cylinder

		22 ¹ / ₂ x 30 ¹ / ₄ "	22 ¹ / ₂ x 32 ¹ / ₄ "
Maximum sheet size		22 ¹ / ₂ x 30 ¹ / ₄ "	22 ¹ / ₂ x 32 ¹ / ₄ "
Minimum sheet size		11 ⁷ / ₁₆ x 15 ³ / ₄ "	11 ⁷ / ₁₆ x 15 ³ / ₄ "
Largest half-sheet two up		14 ³ / ₈ x 22 ¹ / ₂ "	15 ⁹ / ₁₆ x 22 ¹ / ₂ "
Smallest half-sheet two up		8 ¹ / ₄ x 11 ¹ / ₁₆ "	8 ¹ / ₄ x 11 ¹ / ₁₆ "
Inside measurement			
Standard chase		22 ¹ / ₁₆ x 28 ³ / ₈ "	22 ¹ / ₁₆ x 30 ³ / ₈ "
Skeleton chase		22 ¹ / ₁₆ x 29 ¹ / ₈ "	22 ¹ / ₁₆ x 31 ³ / ₁₆ "
Maximum forme			
standard chase		21 ¹ / ₄ x 28 ³ / ₈ "	21 ¹ / ₄ x 30 ³ / ₈ "
skeleton chase		21 ¹ / ₄ x 29 ¹ / ₈ "	21 ¹ / ₄ x 31 ³ / ₁₆ "
between bearers		21 ¹ / ₄ x 30"	21 ¹ / ₄ x 32 ¹ / ₄ "
Gripper margin adjustable between		5 ⁵ / ₁₆ and 3 ³ / ₈ "	5 ⁵ / ₁₆ and 3 ³ / ₈ "
Length of forme from pitch line to leave with 3 ³ / ₈ " (10 mm) gripper margin		21 ⁵ / ₈ "	21 ⁵ / ₈ "
Maximum speed		4600 i.p.h.	4600 i.p.h.
Power requirements		HP 8,3	HP 8,3
Net weight	approx.	11.700 lbs	12.125 lbs
Gross weight packed	approx.	14.600 lbs	15.000 lbs
Overall length		11'6"	11'6"
Overall width including motor		6'7"	6'7"
Height to top of feeder		5'1"	5'1"
Bowl rails		4	4
Number of forme rollers		4	4
Packing thickness	approx.	.047"	.047"

Floor plan
for the Original Heidelberg Cylinder $22\frac{1}{2} \times 30\frac{1}{4}$ " / $22\frac{1}{2} \times 32\frac{1}{4}$ "



Minimum distance on all 4 sides = $25\frac{5}{8}$ " (650 mm)
Floor contact surface = 22 sqft. (2,1 m²)

Oil Drip Pan

We urgently recommend placing the machine on an oil drip pan in order to prevent soiling of the floor. This is especially important on concrete which is subject to decomposition when saturated with oil or grease.

Each stroke of the central lubrication handle forces approximately 2.4 (40 ccm) cubic inches of oil under high pressure into the bearings. The used oil which is forced out drains on the drip pan which should be cleaned weekly.

The drip pan generally comes with a rolled $\frac{1}{4}$ " or $\frac{3}{8}$ " bead and measures 63" by $83\frac{1}{2}$ " (160 x 212 mm). It is made of galvanized sheet iron.

THE DESIGN

Original Heidelberg Cylinder

Paper Size $22\frac{1}{2} \times 30\frac{1}{4}$ " (57 x 77 cm)

$22\frac{1}{2} \times 32\frac{1}{4}$ " (57 x 82 cm)

The **Original Heidelberg Cylinder** is unique in its design and construction and cannot be compared in any way with orthodox stop-cylinder or two-revolution presses. It is built on an entirely new principle, which results in the production at economic costs of the finest quality of print, at speeds previously unknown on letterpress flatbed machines.

The **Original Heidelberg Cylinder** has been installed by leading printers all over the world, which provides convincing evidence of the fact that its unrivalled advantages have been universally recognized.

The designers of the **Original Heidelberg Cylinder** planned to provide for the every day requirements of the printer and to ensure that he could successfully meet competition and rising production costs. It was clear from the start that an entirely new approach to the problems would have to be made. A machine of revolutionary design was essential. The designers did not even have to consider the machine from their own production angle, as new a plant was to be provided to meet their requirements. As a result, the demands of the modern printing house were given the first consideration.

Briefly, these demands were:

1. Greater output with improved quality.
2. Reduction in make-ready time.
3. Reduction to the minimum of idle time, to be achieved by simplicity and speed in changing jobs, forme adjustment, inking, washing-up, maintenance, and general operation.
4. High production speed, positive sheet-control and superb inking on all jobs with four forme rollers which clear the whole forme even when using the maximum size forme.

These are the principles on which the Original Heidelberg Cylinder was planned and built. The result is greater output and reduced costs.

We do not intend to produce a technical treatise regarding the principle of the Original Heidelberg Cylinder. Such a treatise would require too much space and overlook the purpose of an operation manual. We propose, therefore, to concentrate only on the points which are of technical interest for the machine-minder operating our machine and of economic importance to its owner.

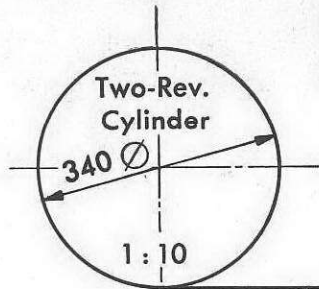
The **Original Heidelberg Cylinder** is a single revolution machine of special design. Whilst with the two-revolution machine, the first revolution of the cylinder is used for the printing stroke and the second revolution for the return stroke of the type-bed, the Original Heidelberg Cylinder printing stroke and return stroke of the type-bed take place within one revolution of its large cylinder.

During the printing stroke the type-bed moves with reduced speed corresponding to the large cylinder diameter of 21" (540 mm) which was chosen. The speed reduction during printing, which results automatically in improved quality, is balanced by a proportionate increase of speed on the return stroke. As is well known, there is no printing function in any machine on the return stroke, which is an idle stroke.

Now please study the drawing on page 16 very carefully.

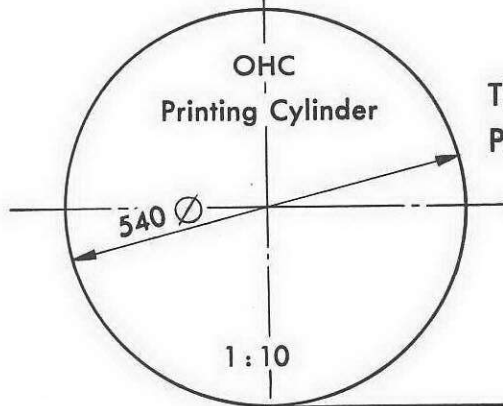
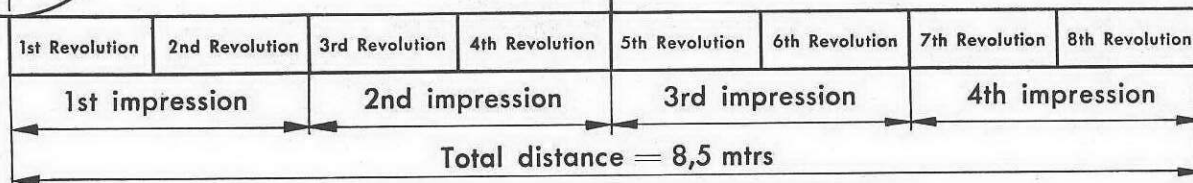
REVOLUTION-, IMPRESSION- AND DISTANCE-DIAGRAM

A Two-Revolution Press of same size and 4 forme rollers of same size makes 4 impressions to a distance of 8,5 mtrs



$$340 \times 3,14 \times 2 = 2,12 \text{ mtr. per impression}$$

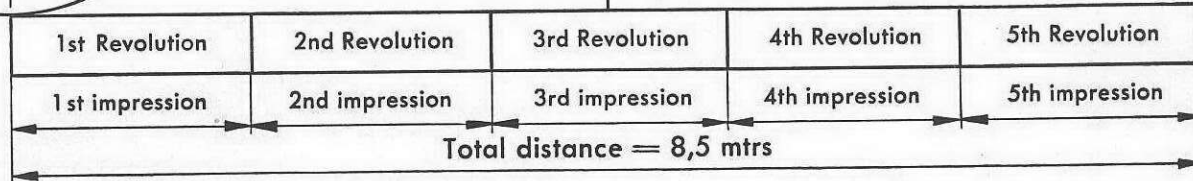
$$\text{Scale} = 1 : 50$$



The OHC makes 5 impressions to a distance of 8,5 mtrs
 Production increase over two rev. press = 1 impression
 Increased Output = 25%

$$540 \times 3,14 \times 1 = 1,7 \text{ mtr. per impression}$$

$$\text{Scale} = 1 : 50$$

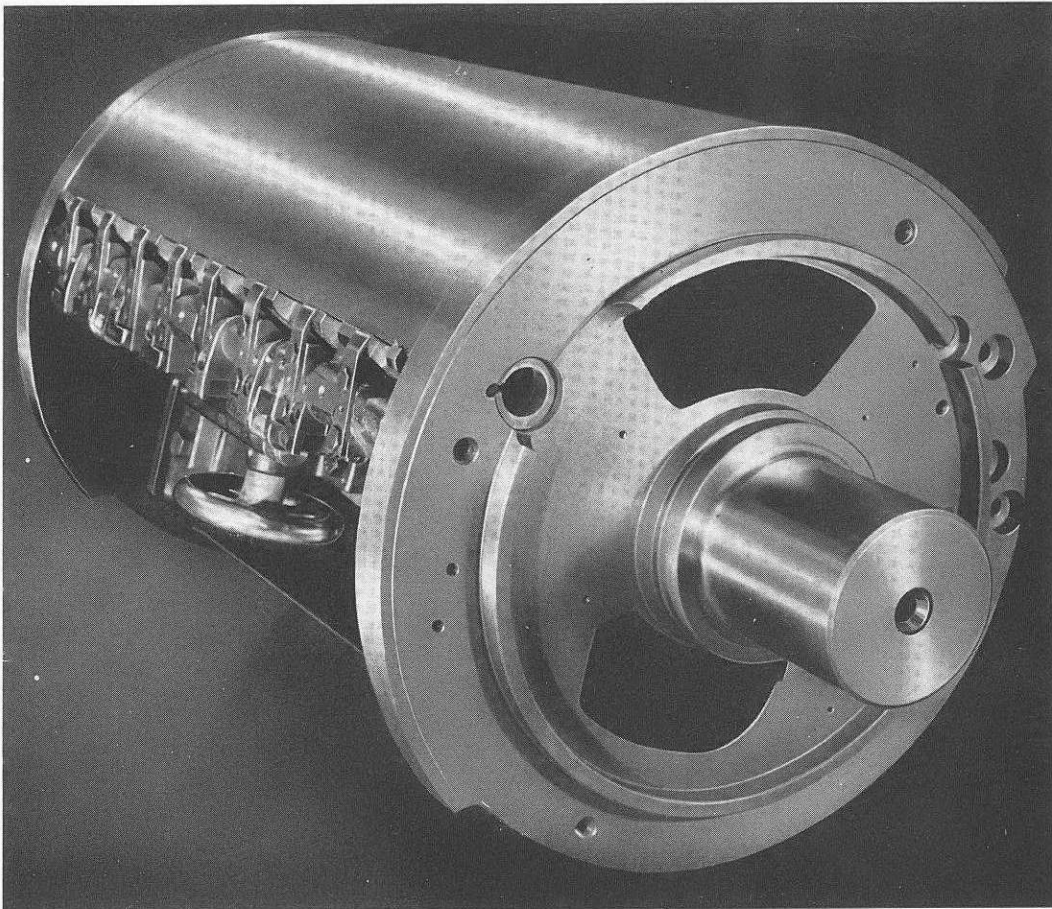


Reduction to the minimum of make-ready time achieved by rigid construction

The cylinder is ground and polished to the limits of mechanical perfection. With its bearings this cylinder weighs one ton and with absolute rigidity ensured, flexure during the printing of heavy formes is impossible. The pressure of the cylinder on the bearers is greater than the counter pressure of the heaviest possible forme.

Make-ready is thus reduced to a minimum and is confined as it should be, to correcting inaccuracies in the forme alone. During make-ready, the whole of the printing area is in view and completely accessible without swinging away or removing any parts.

Illus. 1



**Cutting down unproductive time for changing jobs,
and adjusting forme. Simplification of maintenance and operation**

The operation of the Original Heidelberg Cylinder is simplicity itself. A single handlever controls starting, stopping, paperfeed and impression. The complicated controls and fittings which are usually found on cylinder machines have been eliminated. There are no parts to be lifted or swung away and everything is easily accessible. The few essential controls are clearly visible and are marked with instruction plates.

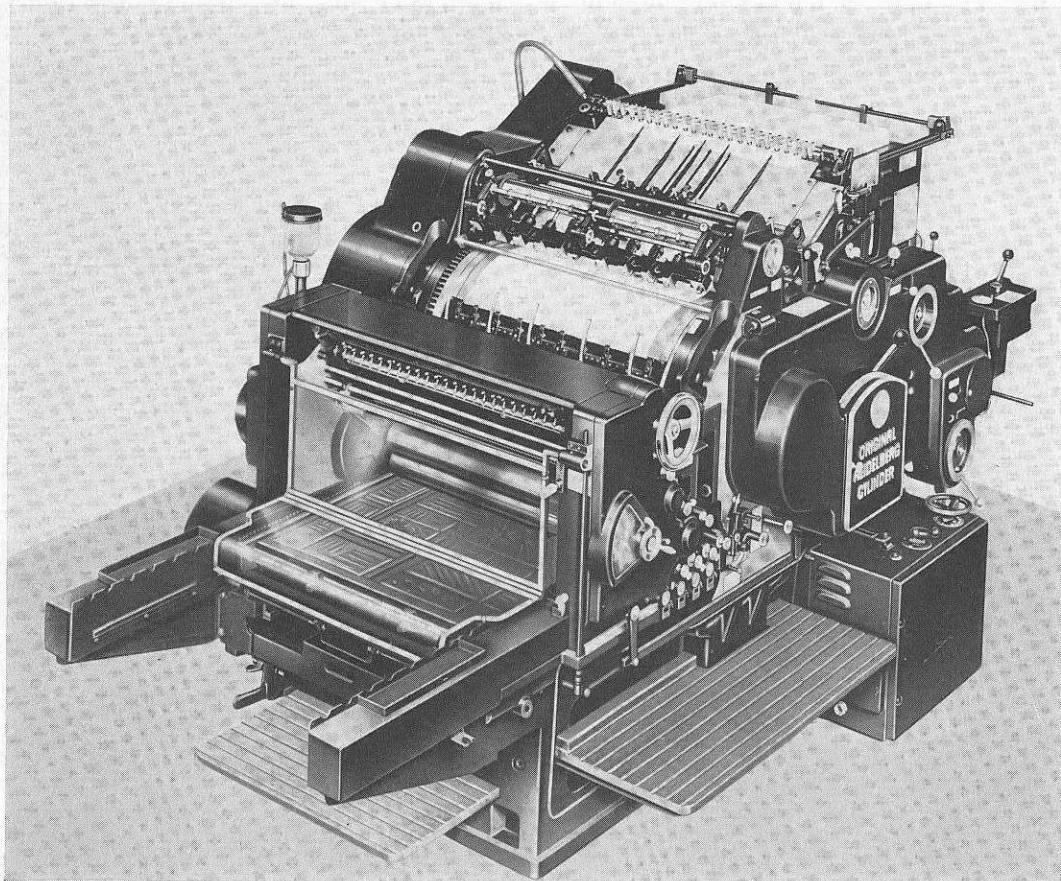
All control levers connected with the starting, stopping or central lubrication of the machine are

equipped with red ball handles. The other control levers which pertain to the operation of the machine are provided with white ball handles.

Positioning the forme, adjusting feed and delivery piles, and setting the lays, are jobs which are simplified by graduated scales on the chase, feed, delivery tables and side lay.

Furthermore, a device for adjusting the formes is supplied as an extra with the Original Heidelberg Cylinder which is instrumental in further reducing

Illus. 2



the idle time of the machine. The various blocks of multicolour work can be exactly positioned by means of this attachment — outside of the press while the previous forme is still printing. On special request we can also supply an imposing surface (composing stone) which, exactly as the type bed of the machine, is equipped with two bearers and stops as well as chase locks. This will enable the printer to completely lock, outside the press, even jobs which require perfect register.

From the feed table to the delivery pile, the sheet is controlled by mechanical grippers. These grippers need no adjustment and will deal effectively with any size or thickness of stock. The grip is variable and is $\frac{5}{16}$ " to $\frac{3}{8}$ ". The feeder itself represents a complete break from tradition, as no tapes, rollers, or similar frictional devices are employed. Four mechanical grippers carry the sheet down the feed board into the lays, and as already mentioned, they need no adjustment whatsoever. By eliminating tapes, rollers and all other encumbrances from the feed board, the danger of marking freshly printed sheets is completely eliminated. A preloading device is supplied as an extra with the Original Heidelberg Cylinder which makes it possible to reload the machine during the run. This cuts down the idle time of the machine during reloading of stock.

The feed grippers take the sheet right down to the front lays which are mounted on the swinging gripper bar. The individually sprung grippers move slowly forward and in conjunction with the side lay register the sheet. At the moment of grip, the sheet lies perfectly flat and the grippers are stationary, so that the amount of grip is not varied with the speed of the machine and perfect register is ensured. The swinging grippers then move in unison with the cylinder and transfer the sheet to the cylinder grippers. As they do not release it until the cylinder grippers have taken control of it, register cannot be lost in transfer.

A four colour process job can be put on various Original Heidelberg Cylinder machines and printed at different speeds without fear of variation in register.

By means of the device for printing two-up small sized jobs can be printed more economically. This is of importance when off-cuts are used up.

The inking system of the Original Heidelberg Cylinder has been specially designed and is driven from both sides of the machine. The thorough breaking up of the ink is carried out by four steel cylinders with different diameters, 1 vibrator and 3 rubber distributor rollers. The reciprocation can be adjusted from 0—45 mm. In order to guarantee a sufficient coverage when printing large solids the ink strip — which the vibrator takes from the duct roller — can be adjusted from 0— $3\frac{1}{2}$ " (0—90 mm) during the run so that the amount of ink can always be adjusted exactly to the printing work which has to be done.

The Original Heidelberg Cylinder is equipped with four forme rollers. **All four forme rollers clear the maximum forme.** Only machine-minders who work on the Original Heidelberg Cylinder can fully appreciate what this means in every day printing. The most delicate and difficult jobs can be produced with ease.

A further big time saver on the Original Heidelberg Cylinder is the roller washing apparatus built into the inking system. Washing up time is reduced to 5 minutes, the rollers remaining in the machine, obviating the need for readjustment after cleaning. The operator has only to sprinkle the rollers with some white spirit from the container, apply the roller washing device by releasing the lock on the handle and in a few minutes the machine is ready for re-inking.

The printed sheet is taken from the cylinder by grippers travelling at the same speed as the cylinder, placed printed side up on a sliding carriage and gently deposited on the delivery pile without any contact with the freshly printed surface. The grippers do not need any adjustment for changes in thickness or size of paper. Tapes strings or sticks are not employed as in most delivery systems, therefore, no provision has to be made for margins or gutter.

An air blower is built in the delivery and allows printing of airmail paper and all thinner stock at

a considerably high speed and with great certainty. This device naturally improves the delivery of all other kinds of stock as well. When printing thin paper the air blast can be reduced by adjusting a screw.

As a special accessory for the delivery of very light stock, an effective blower device consisting of an adjustable tube is fitted to the machine. This tube is provided with blower nozzles and can be swung over the delivery pile in any desired position. Light weight stocks can thus be run at higher speeds.

By means of the device for continuous delivery the full delivery pile can be taken away and a new

board can be inserted without the necessity of stopping the machine.

A built-in anti set-off spray eliminates any need for interleaving.

Apart from the powder spray apparatus a liquid spray apparatus of our own design can be attached. Both spray attachments can be used alternately by a simple turn of a lever.

All the main bearings and important oiling points are supplied with the correct amount of oil by two strokes of the central lubrication pump. All the electrical equipment and built-in lighting units are of the latest design.

PRINTING IN GENERAL

Correct forme alignment

The Original Heidelberg Cylinder is a craftsman's machine, precision built and absolutely rigid in all its parts. The cylinder of the Original Heidelberg Cylinder is free from deflection and remains firmly on its bearers under all conditions. Lack of such rigidity, so often found in less solidly constructed machines, greatly adds to the machine minder's task. These facts play an all important part in reducing make-ready time as the operator is not concerned with variations in the machine, but only in the inaccuracies of the forme.

It is, therefore, worth-while spending a little time bringing the forme up to a similar state of accuracy. The solid area of a block requires more impression

than the rest of the forme. It is incorrect to start with the cylinder packing at exactly the prescribed thickness. Start with a properly adjusted forme then add or take away sheets from the cylinder packing according to the impression required. The specified cylinder packing is approx. .047" (1,2 mm), including the sheet to be printed.

Block justification

The height of a block can only be accurately gauged by means of a micrometer similar to the one shown in Illustration 3. Type high rules and hand gauges are not accurate enough for modern standards.

Illus. 3

