

ILFORD 2240 RC

PROCESSORS FROM SERIAL NUMBER 21583



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INTRODUCTION

▶ The ILFORD 2240RC processor is the latest in a range of ILFORD floor standing processors designed for the continuous rapid processing of ILFORD resin coated paper sheets or rolls (see note 1 below). This processor produces a dry 20.3x25.4cm (8x10 inch) print in just 67 seconds (processors up to serial number 23179) or 70 seconds (processors from serial number 23180). Because the linear speed remains the same, the maximum throughput of 580 prints per hour is achieved in both models. ◀

The ILFORD 2240RC processor combines reliability, sound engineering, high output, low running costs and consistent high quality results in a very compact unit that is easy to install and to maintain.

This service manual provides all the necessary information to keep your processor in good working order. When replacing parts, it is recommended that ILFORD approved parts are used. These are detailed in section 7 and, in the majority of cases, are available ex stock from ILFORD Limited. Please contact your nearest ILFORD selling company when ordering spares, or if you require any other information about your processor.

▶ **Notes**

- 1 The ILFORD 2240RC processor is designed to process and dry ILFORD medium weight (180g/m² base material) resin coated papers. Medium weight, resin coated papers with a lighter base material may cause unreliability in paper transport. Do not attempt to process any light weight or fibre base papers in the ILFORD 2240RC processor.
- 2 For identification, the left and right hand sides of the processor are determined when facing the processor at the paper feed (front) end. ◀

▶ **Modification Note 90**

Processors from serial number 23180 are fitted with a deeper developer tank. Illustrations in this manual show the latest assembly unless otherwise specified. For ease of description, processors up to serial number 23179 are referred to as 'shallow tank' processors and processors from serial number 23180 are referred to as 'deep tank' processors. ◀

ASSOCIATED PUBLICATIONS

Title	Publication number
▶ * ILFOSPEED 2240 Instruction manual	82.197
* ILFOSPEED 2240 Supplementary leaflet	14272
* ILFOSPEED 2240 Installation manual	83.74
+ ILFORD 2240RC Operating manual	39190
ILFOSPEED Roll processing attachments Instruction and Installation manual	82.195A
ILFOSPEED Roll processing attachments Supplementary leaflet	82.195A.1
ILFOSPEED 2000 Manifold kit	83.87
▶ Key	
* Processors up to serial number 23179	
+ Processors from serial number 23180	

MAJOR MODIFICATIONS

The following is a record of the major modifications introduced to the ILFORD 2240RC processor. The detailed information has been included in the appropriate sections of this manual.

From serial number	Description	Retrospective fitting
21583	First ILFOSPEED 2240 processor.	
21688	500mA dryer fan fuses replaced by 630mA fuses (Modification Note 42).	Not applicable
21726	a Improvements to the stainless steel used in the manufacture of the processing tanks (Modification Note 44).	Not applicable
	b Change in production method of upper rear and upper and lower front panels.	Yes
	c Some gears replaced on the developer, fixer, wash and dryer racks. Roller bearings replaced on wash and dryer racks. Chain sprockets replaced on dryer rack.	Not applicable
	d Upper paper guides replaced on dryer rack.	Yes
	e Thermal cut-out replaced on dryer rack.	Yes
	f Roller configuration changed on dryer rack.	No
	g Cover switch (SW5) replaced.	Yes
21810	a PCB2 and PCB4 replaced. PCB9 added resulting in a simplified control system (Modification Note 47).	No
	b Drive motor replaced.	Yes using a conversion kit (part no 00.016738).
	c Paper wire guides replaced and roller configuration changed on dryer rack (Modification Note 47).	Yes
	d Dryer temperature probe removed.	No
	e Dryer rack electrical socket replaced.	Yes

From serial number	Description	Retrospective fitting
▶ Not applicable	To fit zero crossing assembly introduced at Modification Note 73 to earlier processors (Modification Note 94).	Yes
23297	Corporate colour scheme (black and white) introduced (Modification Note 95).	No

APPROVED ABBREVIATIONS

The following is a list of abbreviations used in this manual, particularly on some diagrams and in section 7 (Parts lists).

Word(s) in full	Abbreviation
as required	AR
assembly	assy
control, temperature	CT
countersunk head	csk hd
developer	dev
diameter	d
figure	fig
fixer	fix
flexible hose	flex hose
hexagonal head	hex hd
inside diameter	id
left hand	lh
number	no.
outside diameter	od
overflow	oflow
pan head	phd
printed circuit board	PCB
relay	RL
replenishment	rep
right hand	rh
self tapping	stap
shakeproof	sproof
stainless steel	ss
switch	SW
teeth	T
temperature	temp
terminal block	TB

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CHASSIS

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1-1 DESCRIPTION

The processor chassis can be divided into two major sections; access panels and mainframe and fixtures.

All components in, or adjacent to, solutions are manufactured using an inert, mechanically stable plastic or stainless steel to BS316S33.

All access panels are manufactured using stainless steel to BS304 and then coated with a two part epoxy paint.

1.1 Access panels

See figure 1.1.

Access panels are designed to be removed quickly and easily to gain access to the internal components of the processor. Table 1.1 details which area of the processor each access panel gives.

▶1.2 Mainframe and fixtures

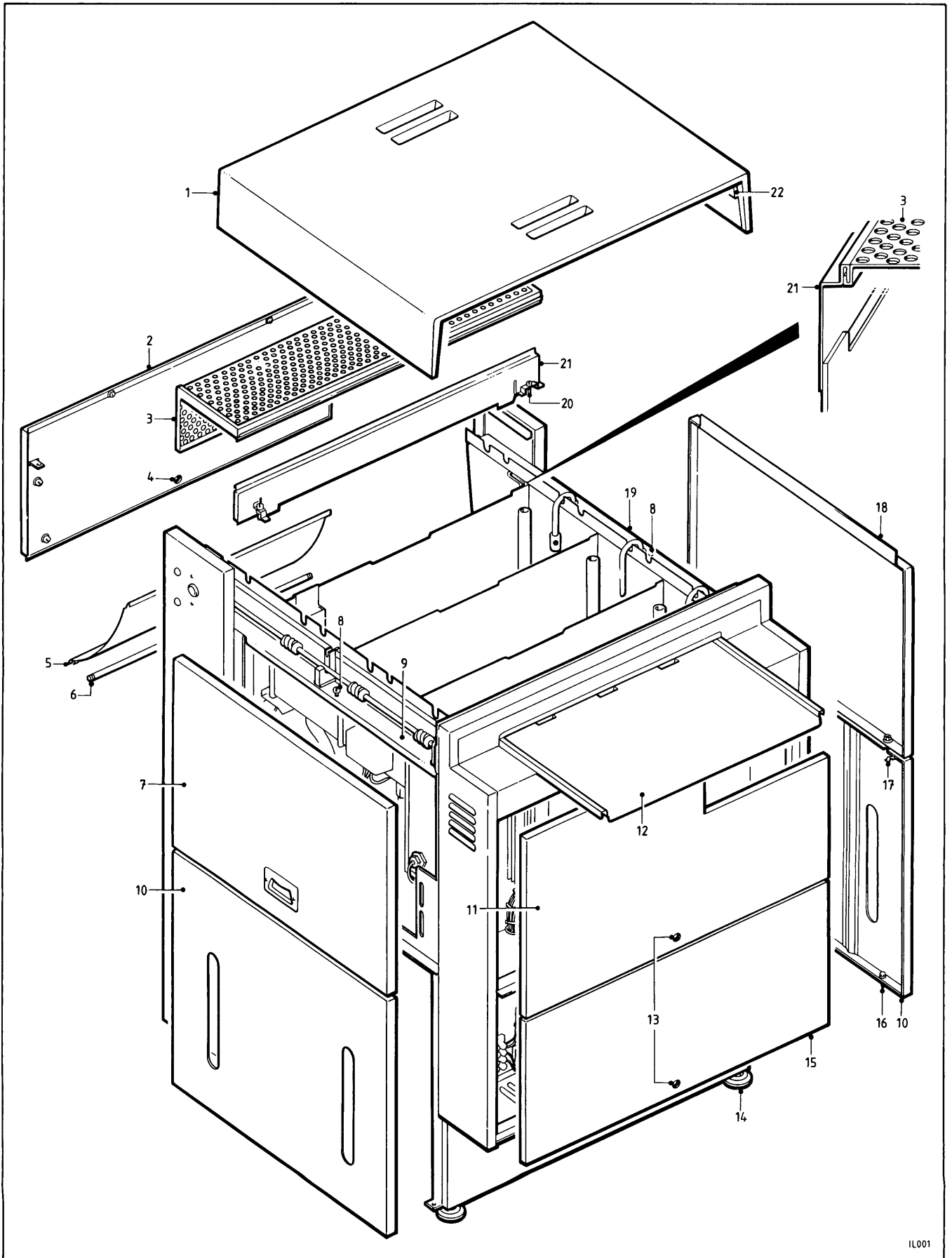
See figure 1.1.

These items do not require dismantling during normal servicing operations. If it is necessary to remove part of the mainframe or any of the fixtures, the operation will be described in the appropriate section of this manual.

The mainframe is supported on four adjustable feet. To level the processor, see the ILFOSPEED 2240 Installation manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180).

Figure 1.1

- 1 Top cover
- 2 Rear panel
- 3 Dryer grille
- 4 Securing screw - rear panel
- 5 Paper exit chute
- 6 Support bar - paper exit chute
- 7 Access panel - upper left side
- 8 Securing screw - upper side panels
- 9 Support section - left hand
- 10 Access panel - lower left and right sides
- 11 Access panel - upper front
- 12 Paper feed tray (see section 2)
- 13 Securing screw - front panels
- 14 Adjustable foot
- 15 Access panel - lower front
- 16 Locating pin
- 17 Spring clip
- 18 Access panel - upper right side
- 19 Support section - right hand
- 20 Securing screw - anti-splash panel
- 21 Anti-splash panel
- 22 Magnet



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Access panels, mainframe and fixtures
▶Figure 1.1◀

Table 1.1 Access panels

Panel	Access to
Top cover	Processing tanks. Processing racks and drive shaft.
Front, upper	Electrical compartment containing all control PCB's, mains transformer, voltage stabilizer and control panel.
Front, lower	Electrical compartment containing zero crossing unit, mains and circuit fuses, switching relays and mains input terminal block. Replenishment pump assembly.
Left side, upper	Main drive motor. Circulation pump, fixer. Dryer fan, left hand side. ▶ * Heater element connections, developer and fixer. + Heater element connections, fixer. + Temperature probe, developer. + Thermal cut-out, developer. ◀
Left side, lower	Replenishment tank assembly. Services support panel.
Right side, upper	Circulation pump, developer. Dryer fan, right hand side. ▶ * Temperature probe, developer. ◀ Dryer temperature probe (processors up to serial number 21809). ▶ * Thermal cut-out, developer and fixer. + Thermal cut-out, fixer. + Heater element connections, developer. ◀
Right side, lower	Replenishment tank assembly. Services support panel.
Dryer grille/rear panel	Dryer section complete.
▶	Key * Processors up to serial number 23179 + Processors from serial number 23180 ◀

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1-2 **REMOVAL AND INSTALLATION**

See figure 1.1.

CAUTION

High voltages are used in the ILFORD 2240RC processor. Before any of the access panels are removed, isolate the processor from the electrical mains supply.

2.1 Top cover

The processor top cover is manufactured from polyurethane foam, and sits on the two upper side access panels. To remove the cover, carefully lift it away from the processor. When refitting the top cover, ensure the magnet is located at the front right hand side of the cover.

Note

The processor top cover is the only access panel fitted with an automatic safety feature. For operator safety, the drive motor and all dryer heaters are interlocked with the cover and are switched off when the cover is removed or is not correctly positioned.

2.2 Left hand upper side panel

The left hand upper side panel is secured by a single screw, held captive in the left hand support section, and by two locating pins. To remove the panel, slacken the screw and lift the panel, using the hand recess, to release the locating pins. Refit the panel in reverse order.

2.3 Right hand upper side panel

The right hand upper side panel is secured by a single screw, held captive in the right hand support section, and by two locating pins. Removal of this panel is identical to 2.2 above. When refitting the panel, ensure the lip at the top of the panel is located behind the support section.

2.4 Left and right hand lower side panels

The left and right hand lower side panels are secured by two spring clips and locating pins. To remove the panel, carefully pull it away from the mainframe. When refitting the panel, locate the two pins and push the top edge into the mainframe until the panel is held secure by the spring clips.

2.5 Upper and lower electrical panels

The upper and lower electrical panels at the front of the processor are each secured by a single captive screw and two locating pins. To remove the panel, release the screw and ease the panel away from the mainframe. Refit the panel in reverse order.

2.6 Dryer grille

Removal

The dryer grille is secured at the front by the anti-splash panel and, at the rear, by the rear panel locating pins. To remove the dryer grille, proceed as follows:

- 1 Release the two captive screws securing the anti-splash panel to the processor support sections.
- 2 Lift the anti-splash panel away.
- 3 Remove the dryer grille by easing it backwards away from the processor.

Installation

To install the dryer grille, proceed as follows:

- 1 Locate the dryer grille lower lip between the rear panel locating pins and the rear panel top edge. Push the grille fully forwards.
- 2 Locate the anti-splash panel on the dryer grille front lip. See the detail on figure 1.1. Ensure the anti-splash panel is positioned forward of the dryer section forward bulkhead to prevent spray from the wash water tank from entering the dryer section.
- 3 Secure the anti-splash panel with the two captive screws.

2.7 Rear panel

The rear panel can be removed to give unrestricted access to the dryer section. The panel is secured by the dryer grille, a single captive screw and two locating pins. To remove the rear panel, remove the dryer grille (see 2.6 above), release the screw and lift the panel away from the processor. Install the panel in reverse order.

2

PAPER TRANSPORT SYSTEM

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2-1 DESCRIPTION**1.1 Paper path through the processor**

See figure 1.1.

The sheet is transported by the detector rollers into the processor and then through the four processing racks: developer, fixer, wash and dryer, via a network of roller pairs and paper guides. The sheet emerges fully processed and dry at the rear of the processor and falls into the receive tray. The time taken for ▶ this operation (the dry-to-dry cycle time) is preset to ◀ give optimum processing and drying quality, and should not be adjusted except by a qualified service engineer. To adjust the dry-to-dry cycle time, see section 4A-3.4 or 4B-3.4.

1.2 Drive assembly

See figure 1.2.

The drive assembly is driven by a 24V dc motor, located below the developer tank on the left hand side of the processor. The motor drives a layshaft, via sprockets and a chain. The layshaft is supported at each end by ball race bearings and in the centre by a plastic bearing block, and has four worm gears fixed along its length. The worm gears are located one to each of the four processing racks and drive the rack rollers via gear trains. The input detector at the front of the processor switches the drive system on when a sheet of paper is fed into the detector (see section 4A-1.2 or 4B-1.2).

Some part numbers in the drive system differ depending on the processor serial number. Table 1.1 details the part numbers affected by serial number, and condenses the information given in Section 7.3 (Paper transport system) for easy reference.

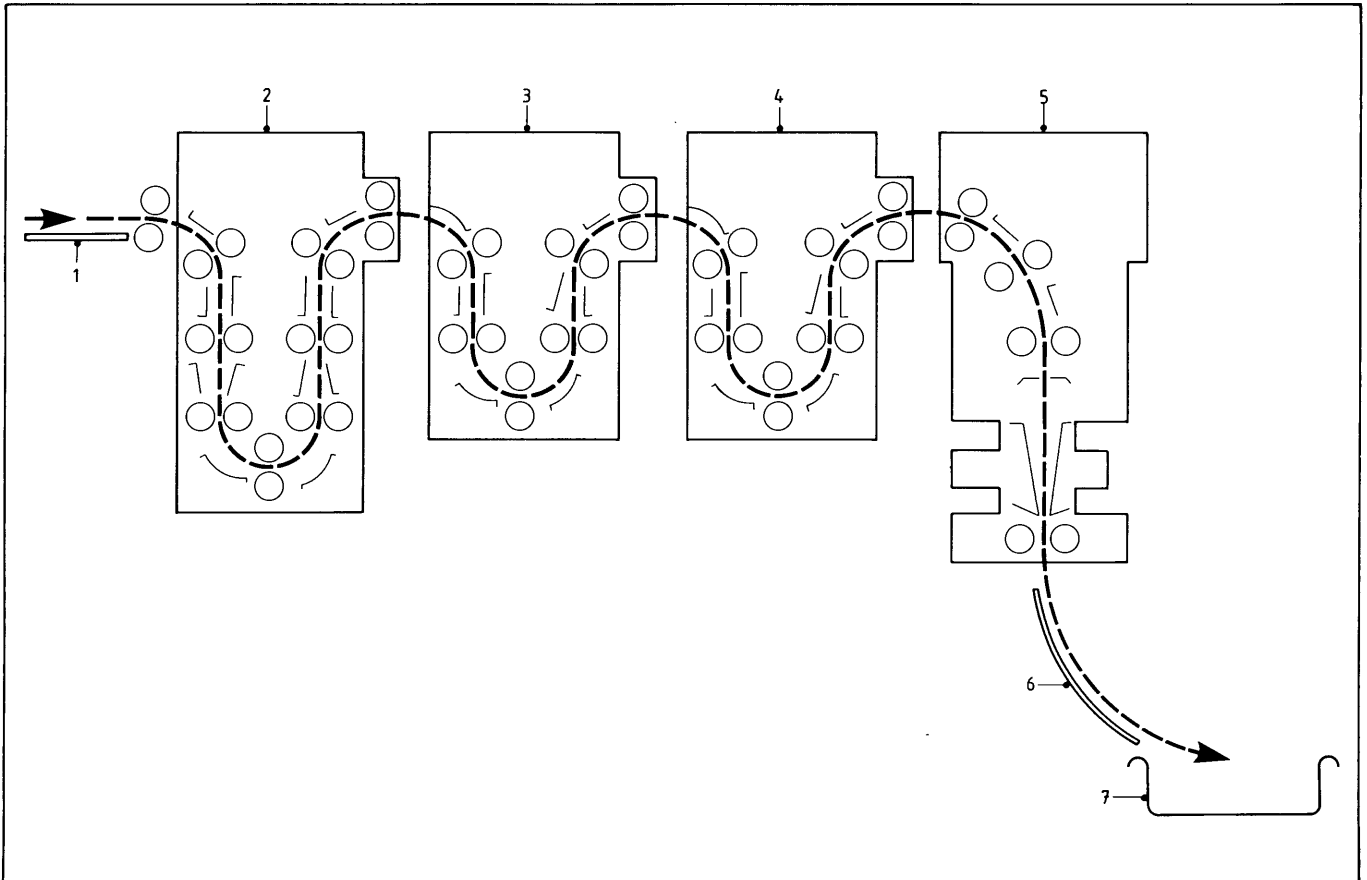
CAUTION

It is most important to quote the part numbers applicable to the processor serial number.

Table 1.1 details the arrangement on standard production processors. The 16 teeth drive sprocket fitted to processors from serial number 21810 was replaced by a 20 teeth sprocket on later processors, to give better torque characteristics. On processors from serial number 21810 up to serial number 21885 fit a 20 teeth sprocket when replacement is required.

Figure 1.1

- 1 Feed tray and paper detector assembly
- 2 Developer rack
- 3 Fixer rack
- 4 Wash rack
- 5 Dryer rack
- 6 Paper exit chute
- 7 Receive tray



▶ Paper path through the processor - typical ◀
 Figure 1.1

Table 1.1 Drive system - parts

Serial number	Drive motor	Drive sprocket	Layshaft sprocket	Chain (excluding link) (Pitch = 6mm)
*Up to 21809	+10.190058	00.015112 40 teeth	10.580007 13 teeth	00.018505 Length 810mm Pitches 135
▶ 21810-21885	00.016568	**16 teeth	10.580007 13 teeth	00.018507 Length 702mm Pitches 117
▶ From 21886	00.016568	00.005500 20 teeth	10.580007 13 teeth	00.018509 Length 714mm Pitches 119
▶ From 23180	00.016568	00.005500 20 teeth	10.580007 13 teeth	00.030690 Length 756mm Pitches 126

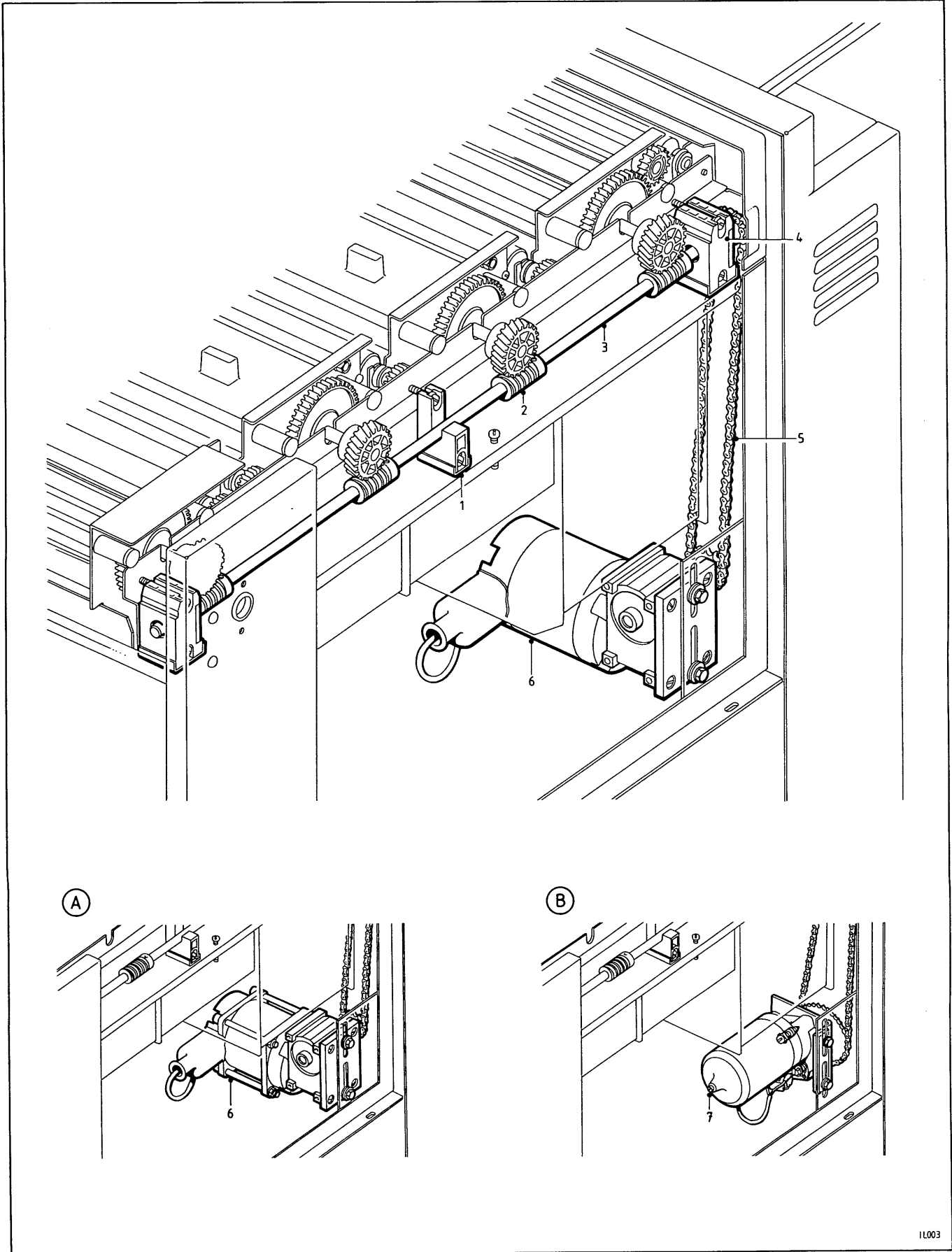
Key

+ Motor brush 10.190075.

* Replacement drive motor kit 00.016738 consists of drive motor 00.016568, 20 teeth drive sprocket 00.005500 and chain 00.018509.

The chain link (10.004111) is common to all chains.

▶ ** As fitted on production. Fit a 20 teeth sprocket and 714mm long chain when replacement is required. ◀



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Figure 1.2

- 1 Intermediate support
- 2 Worm gear
- 3 Layshaft
- 4 Bearing assembly
- 5 Drive chain
- 6 Drive motor (processors from serial number 21810)
- 7 Drive motor (processors up to serial number 21809)

▶ **Detail A**

Assembly, processors from serial number 21810 up to serial number 23179.

Detail B

Assembly, processors up to serial number 21809. ◀

1.3 Input detector assembly

See figure 1.3.

The input detector assembly consists of a feed tray, three detector flaps and two rollers. When a sheet (or roll) is fed into the processor, the sheet makes contact with the detector flaps. The detector rod is supported by two bearings and the detector flaps move upward in an arc. A magnet secured to the right hand flap activates the 'feed' switch (SW2) which, in turn, switches on the drive system (see section 4A-1.2 or 4B-1.2).

The input detector rollers are driven from a gear on the developer rack, and the rollers feed the sheet into the processor.

When the sheet leaves the input detector assembly, the detector flaps resume their original position and open the 'feed' switch SW2 (see section 4A-1.2 or 4B-1.2).

1.4 Processing racks - general

The sheet is transported through the processing solutions by three roller racks; developer, fixer and wash. The roller racks are not interchangeable and have colour-coded tie rods as follows:

Developer - red
 Fixer - blue
 Wash - black

After processing, the sheet is transported through a dryer rack, which is not colour coded.

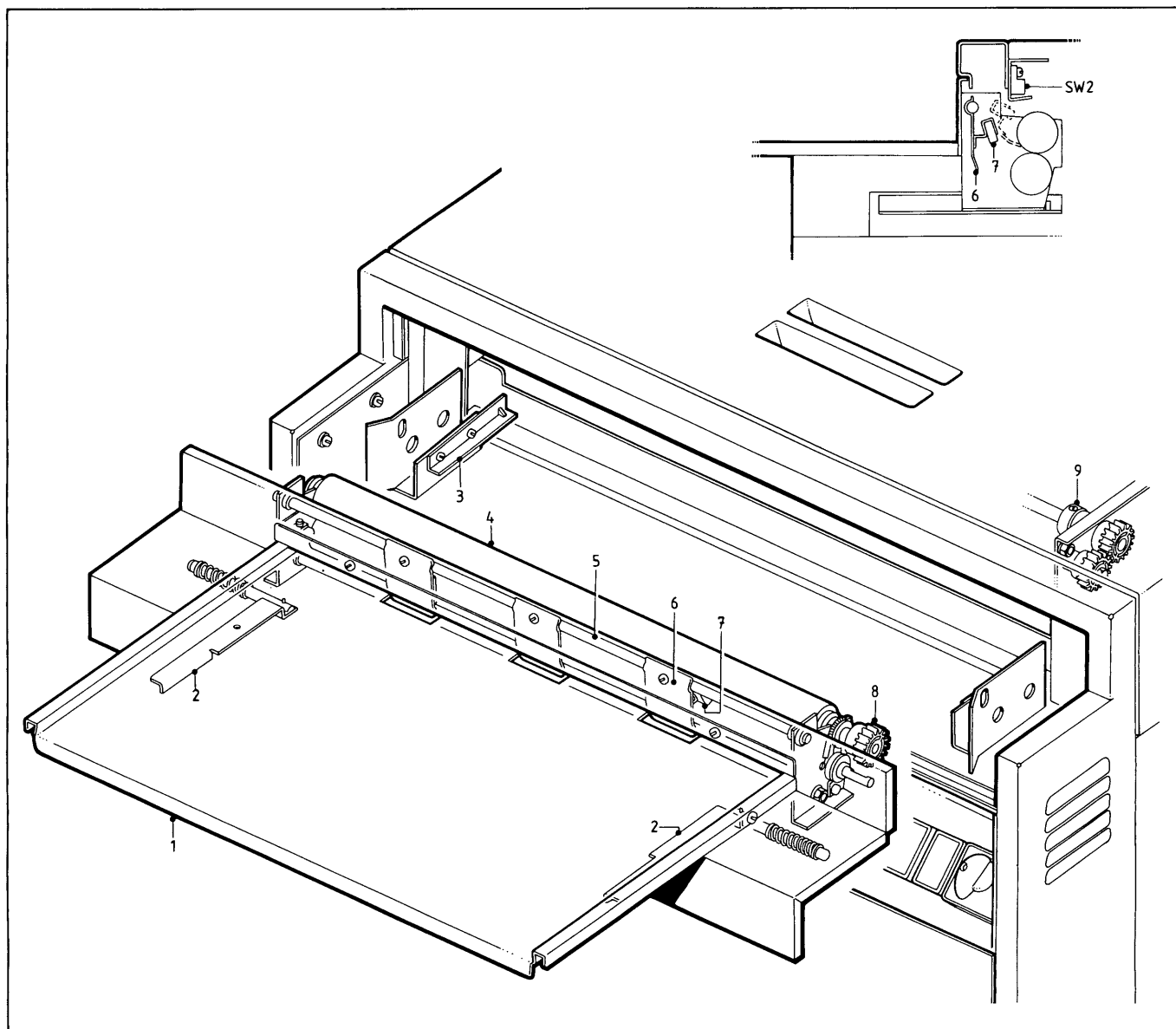
Each rack consists of a number of rollers, driven by gears, and paper guides to guide the sheet smoothly between the rollers. Various types of rollers are used in the processing racks to achieve the best transportation characteristics. Table 1.2 details the types of rollers used.

Table 1.2 Roller types

Part no.	Description	Used in
10.000600	Rubber roller bonded onto a stainless steel hollow core. Ground to an external diameter of 2.5cm.	Input detector Developer rack Fixer rack Wash rack Dryer rack
10.000100	Heavy duty PVC bonded onto a hollow aluminium core with welded PVC end plugs and stainless steel stub shafts. External diameter 2.5cm.	Input detector Developer rack Fixer rack Wash rack
10.000300	Heavy duty PVC bonded onto a stainless steel solid core. External diameter 2.5cm.	Developer rack Fixer rack
10.000500	Rubber roller bonded onto a stainless steel hollow core. Ground to an external diameter of 1.5cm.	Developer rack Fixer rack
00.014343	Expanded rubber bonded onto a stainless steel solid core. External diameter 2.5cm.	Wash rack Dryer rack
00.014340	Rubber roller bonded onto a stainless steel solid core, with extended spindles at each end. External diameter 2.5cm.	Dryer rack
00.014333	Aluminium solid core with stainless steel extended spindles at each end. External diameter 2.5cm.	Dryer rack
00.014944	Rubber roller bonded onto a stainless steel solid core, with an extended spindle at one end. External diameter 2.5cm.	Dryer rack

Figure 1.3

- 1 Feed tray
- 2 Locking lever
- 3 Locating guide
- 4 Roller assembly
- 5 Detector rod
- 6 Detector flap
- 7 Magnet
- 8 Drive take up gear
- 9 Processor drive take off



Input detector assembly
Figure 1.3

Removal from the processor

CAUTION

All four processing racks are fitted with tie rods to enable the racks to be lifted out of the processor. It is most important to handle the racks with the tie rods and not the drive shaft. Repeated handling by the drive shaft may distort the shaft causing damage to the plastic bearings, leading to incorrect transportation of the sheet through the rack.

The developer, fixer and wash racks simply lift out of the processor. Tilt the rack over the tank to drain excess solution from the rack. To remove the dryer rack, remove the dryer grille (see section 1), disconnect the dryer plug (see figure 1.7) and lift the rack out of the processor.

When refitting the racks, lower the developer, fixer and wash racks slowly to avoid splashes. Ensure all support pins are located correctly and the drive gears are correctly meshed with the layshaft gears. On the dryer rack, re-connect the dryer plug.

1.5 Developer rack

See figure 1.4.

- ▶ The developer tank capacity has been increased from 21 to 23 litres on processors from serial number 23180.

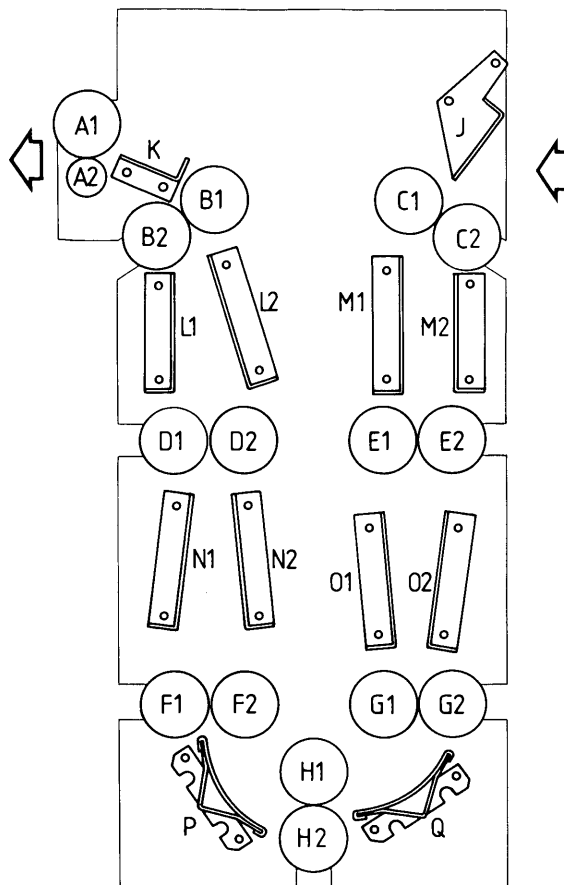
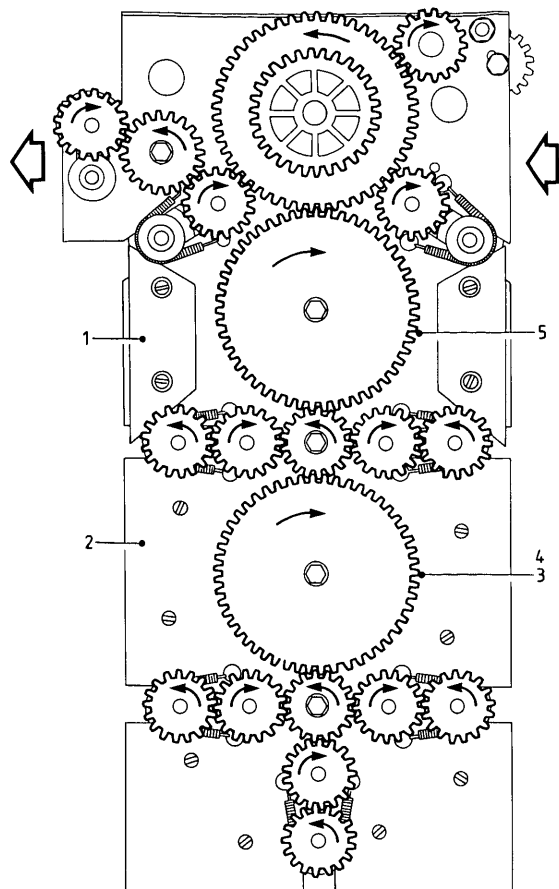
Important note

Figure 1.4 shows the developer rack for both the deep tank (top two details) and the shallow tank (bottom two details) processors. The racks are not interchangeable. Since the racks differ in dimension only, please regard the following information as being applicable to both racks unless otherwise specified. ◀

To ensure maximum protection from corrosion, all metal parts of the developer rack are manufactured from stainless steel to BS316S33. All bearings and gears, except for the helical gear, are manufactured from polypropylene (Moplen), again, to maximise protection against damage by solution contact. The helical gear is manufactured from an acetal (Delrin) material.

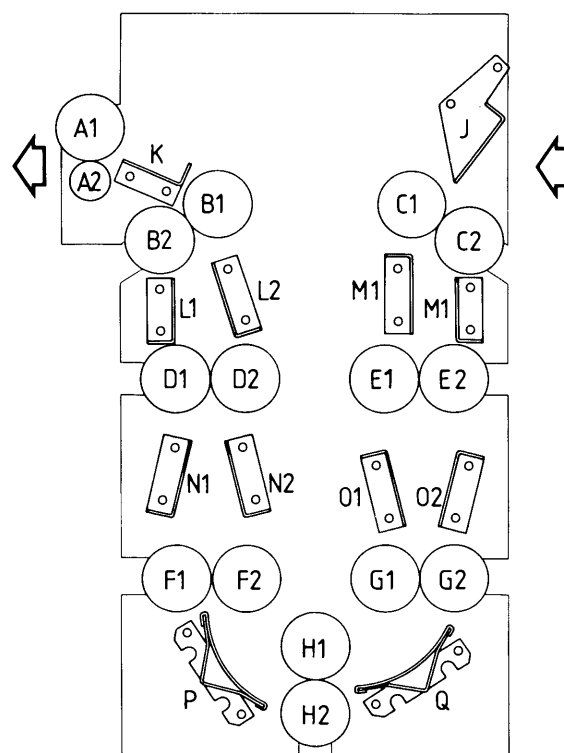
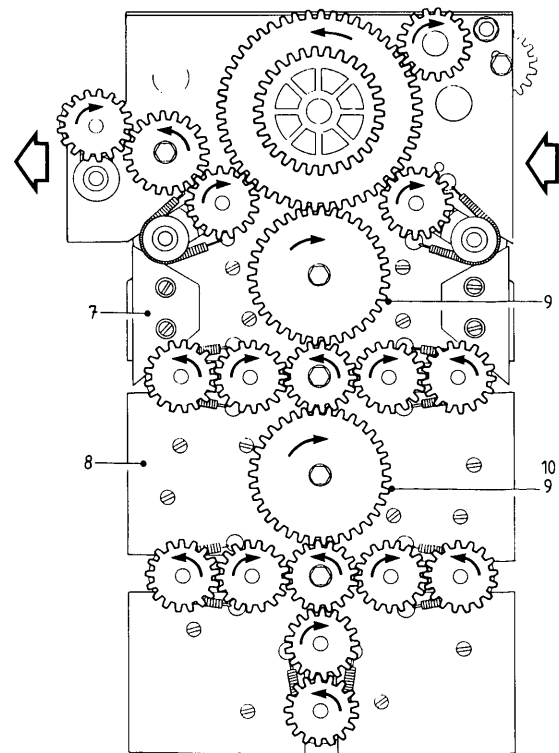
The developer rack (colour coded red) contains eight pairs of rollers and twelve paper guides. The first seven pairs of rollers are retained by spring tension and the eighth pair (exit) act as a squeegee to reduce the effects of chemical transfer. The eighth pair of rollers are not spring retained, but use a combination of a relatively light lower roller, and a relatively heavy upper roller to give an even nip pressure across the roller width.

The roller configuration shown on figure 1.4 and table 1.3 is recommended for paper sheets only. To process paper rolls, the roller configuration must be modified as detailed in the separate manual supplied with the ILFORD roll processing attachments kit.



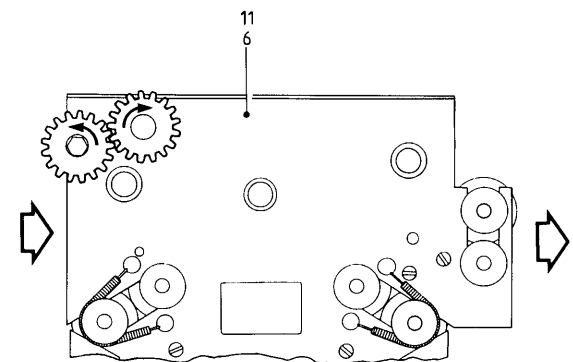
Developer rack - part numbers from serial number 23180

Ref	Part no.	Description	Quantity
1	00.027853	Roller retaining plate	4
2	00.027856	Side plate, lh	1
3	00.022587	Gear, 51T, 10mm id	1
4	00.027799	Idler gear shaft, 10mm od	2
5	00.027798	Gear, 48T, 10mm id	1
6	00.027858	Side plate, rh	1
L1,M2	00.027819	Guide, 45mm	2
L2,M1,N1			
N2,O1,O2	00.027821	Guide, 55mm	6



Developer rack - part numbers up to serial number 23179

Ref	Part no.	Description	Quantity
7	6073-4-340	Roller retaining plate	4
8	20.006664	Side plate, lh	1
9	10.400005	Gear, 34T, 6mm id	2
10	10.200007	Idler gear shaft, 6mm od	2
11	20.006663	Side plate, rh	1
L1,M2	10.300700	Guide, 25mm	2
L2,M1,N1			
N2,O1,O2	10.300600	Guide, 35mm	6



Developer rack - rollers, paper guides and gears
 Figure 1.4

Table 1.3 Developer rack - rollers and guides configuration

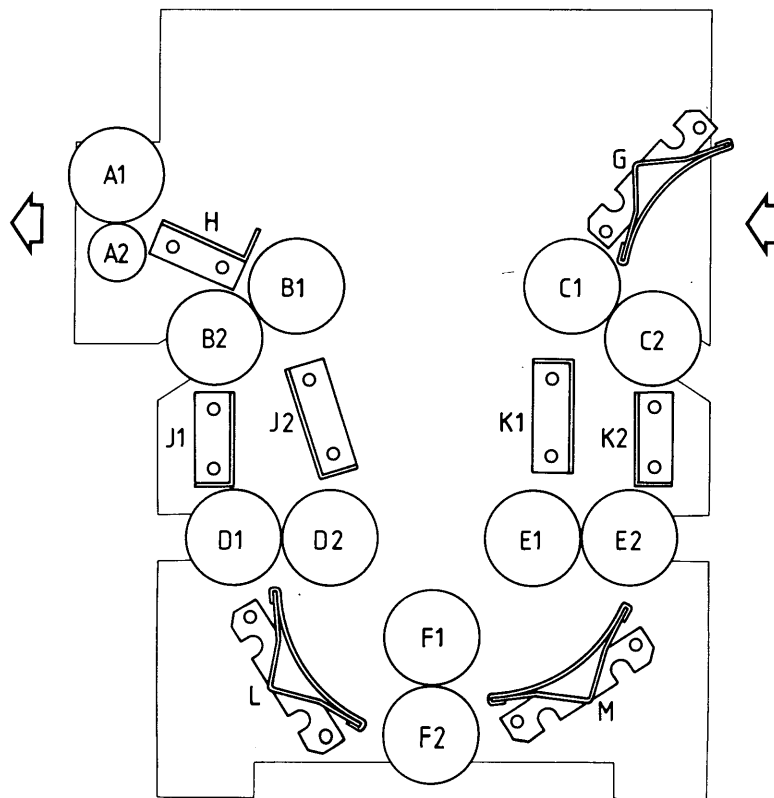
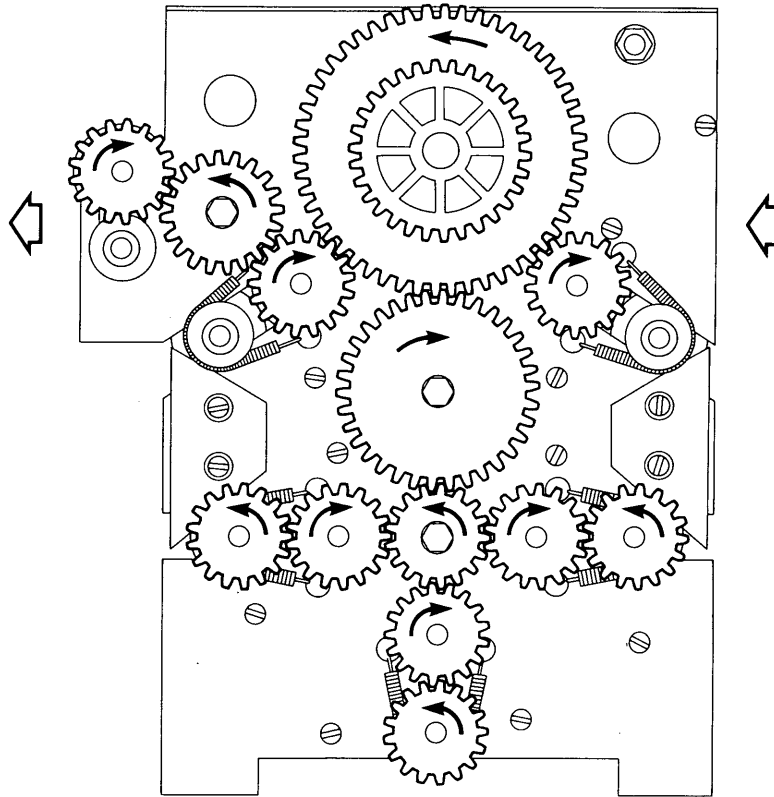
Part no.	Description	Location	Quantity	
Rollers				
1	10.000300	Roller, PCV, heavy	A1	1
2	10.000500	Roller, small rubber	A2	1
3	10.000600	Roller, rubber	B1,B2,C2	3
4	10.000100	Roller, PVC	C1,D1,D2, E1,E2,F1, F2,G1,G2, H1,H2	11
Guides				
1	20.006132	Guide, inlet	J	1
2	10.300800	Guide, output	K	1
▶ 3	*10.300700	Guide, 25mm	L1,M2	2
	+00.027819	Guide, 45mm	L1,M2	2
4	*10.300600	Guide, 35mm	L2,M1,N1, N2,O1,O2	6 ◀
▶	+00.027821	Guide, 55mm	L2,M1,N1, N2,O1,O2	6 ◀
5	10.300500	Guide, curved	P,Q	2
▶	Key			
	*Processors up to serial number 23179			
	+Processors from serial number 23180			◀

1.6 Fixer and wash racks

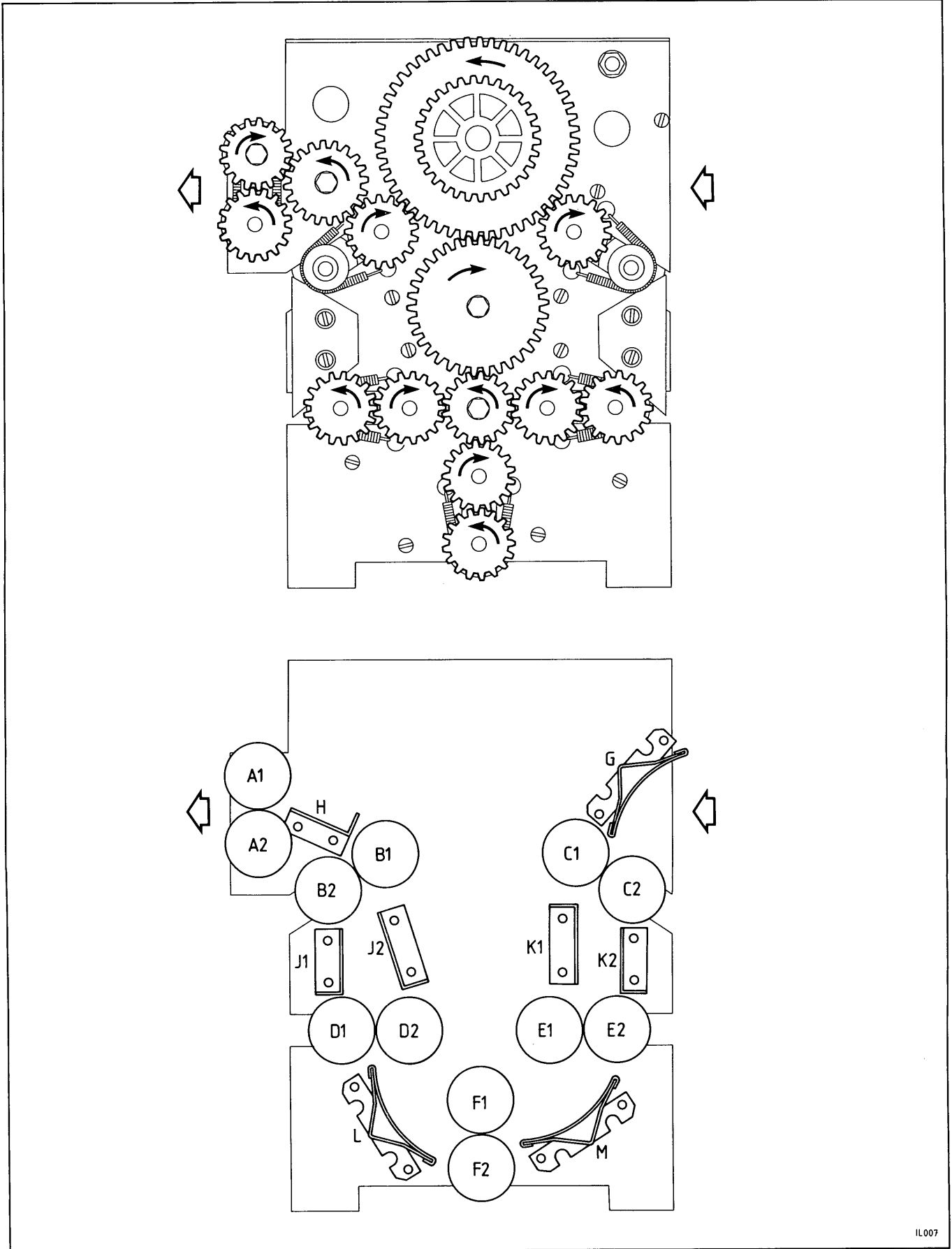
See figures 1.5 and 1.6.

To ensure maximum protection from corrosion, all metal parts of the fixer and wash racks are manufactured from stainless steel to BS316S33. On the fixer rack, all bearings and gears, except for the helical gear, are manufactured from polypropylene (Moplen), again, to maximise protection against damage by solution contact. The helical gear is manufactured from an acetal (Delrin) material. On the wash rack, all bearings and gears are manufactured from an acetal (Delrin) material.

The fixer (colour coded blue) and wash (colour coded black) racks each contain six pairs of rollers and eight paper guides. On the fixer rack, the first five pairs of rollers are retained by spring tension and the sixth pair (exit) act as a squeegee to reduce the effects of chemical transfer. The sixth pair of rollers are not spring retained, but use a combination of a relatively light lower roller and a relatively heavy upper roller to give an even nip pressure across the roller width.



Fixer rack - rollers, paper guides and gears
Figure 1.5



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On the wash rack, the first five pairs of rollers are retained by spring tension. The exit rollers are held together by springs to provide the extra squeegee action in order to remove excess water prior to transportation of the print into the dryer. This extra squeegee action makes the drying process more efficient.

The roller configuration shown on figures 1.5 and 1.6 and tables 1.4 and 1.5 is recommended for paper sheets only. To process paper rolls, the roller configuration must be modified as detailed in the separate manual supplied with the ILFORD roll processing attachments kit.

Table 1.4 Fixer rack - rollers and guides configuration

Part no.	Description	Location	Quantity	
Rollers				
1	10.000300	Roller, PCV, heavy	A1	1
2	10.000500	Roller, small rubber	A2	1
▶3	10.000600	Roller, rubber	B1,C1	2
4	10.000100	Roller, PVC	B2,C2,D1, D2,E1,E2, F1,F2	8
Guides				
1	10.300500	Guide, curved	G,L,M	3
2	10.300800	Guide, output	H	1
3	10.300700	Guide, 25mm	J1,K2	2
4	10.300600	Guide, 35mm	J2,K1	2

Table 1.5 Wash rack - rollers and guides configuration

Part no.	Description	Location	Quantity	
Rollers				
1	00.014343	Roller, expanded rubber	A1	1
2	10.000100	Roller, PVC	A2,D1,D2, E1,E2,F1, F2	7
3	10.000600	Roller, rubber	B1,B2,C1, C2	4
Guides				
1	10.300500	Guide, curved	G,L,M	3
2	10.300800	Guide, output	H	1
3	10.300700	Guide, 25mm	J1,K2	2
4	10.300600	Guide, 35mm	J2,K1	2

1.7 Dryer rack

See figure 1.7.

To ensure maximum protection against corrosion, all metal parts of the dryer rack are manufactured from stainless steel to BS316S33. All bearings and gears are manufactured from an acetal (Delrin) material.

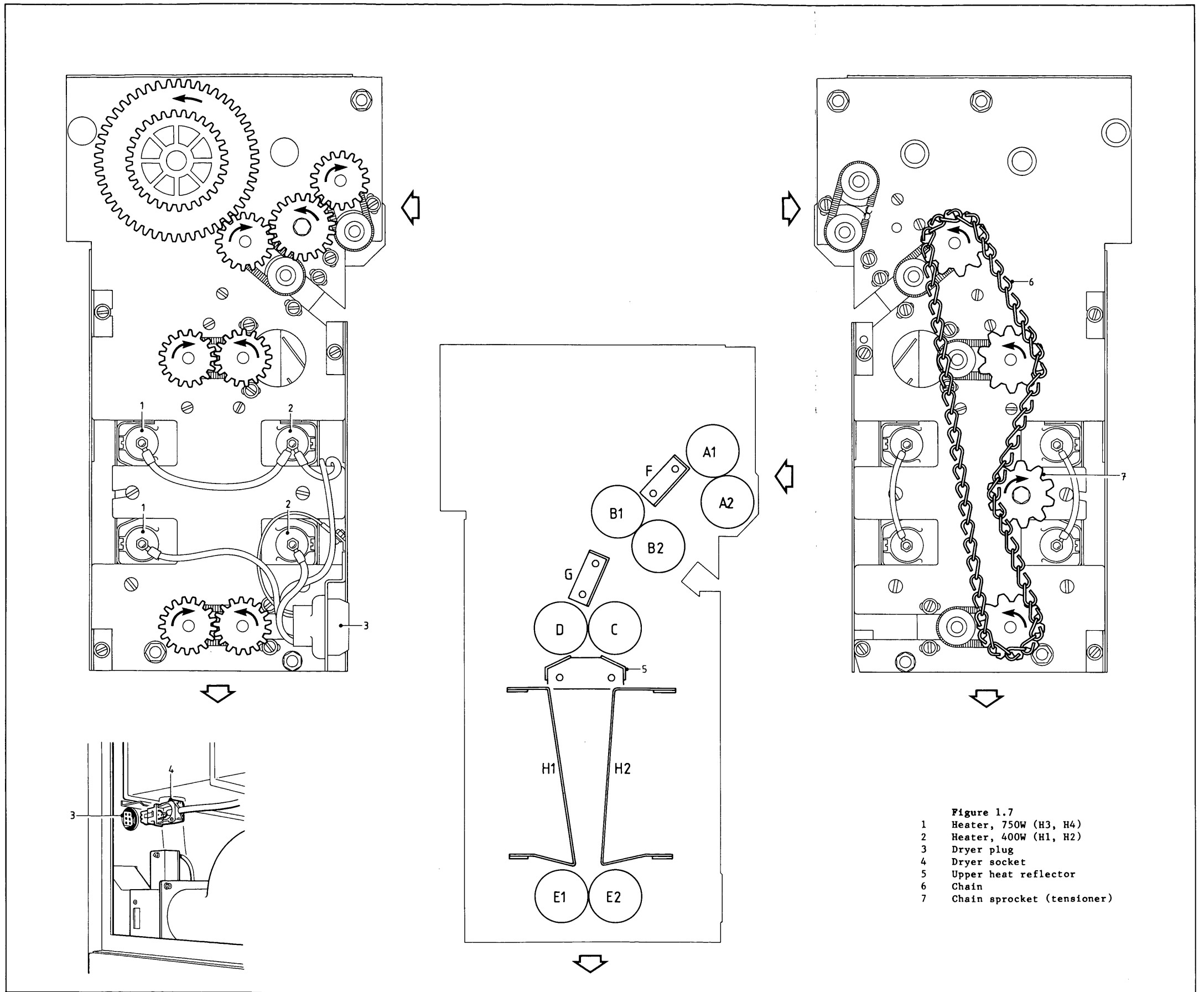
The dryer rack (no colour coding) contains four pairs of rollers, four paper guides and two pairs of heaters; one pair of 400W and one pair of 750W heaters. The 400W heaters (H1 and H2) are located at the front of the rack and dry the paper base side. The 750W (H3 and H4) heaters are located at the rear of the rack and dry the emulsion side. The 400W heaters operate continuously (on processors up to serial number 21809) or during processing only (on processors from serial number 21810) and are not subject to operator control. The 750W heaters operate during processing and are controlled by the dryer temperature control at the front of the processor (see section 4A-1.5 or 4B-1.6).

Unlike the three processing racks, the rollers in the dryer rack are not driven exclusively by a gear train. The lower two roller pairs are chain driven using sprockets and chain located on the right hand side of the rack.

All roller pairs in the dryer rack are retained by spring tension and by retaining plates. The roller configuration shown on figure 1.7 and table 1.6 is recommended for paper sheets only. To process paper rolls, the roller configuration must be modified as detailed in the separate manual supplied with the ILFORD roll processing attachments kit.

Table 1.6 Dryer rack - rollers and guides configuration

Part no.	Description	Location	Quantity
Rollers			
1	10.000600 Roller, rubber	A1,A2	2
2	00.014340 Roller, rubber, double ended	B1	1
3	00.014343 Roller, expanded rubber	B2	1
4	00.014333 Roller, aluminium, double ended	D,E1	2
5	00.014944 Roller, rubber	C,E2	2
Guides			
1	10.300700 Guide, 25mm	F,G	2
2	00.016274 Wire guide, front	H2	1
3	00.016273 Wire guide, rear	H1	1



Dryer rack - rollers, paper guides and gears
Figure 1.7

1.8 Dryer rack - air system

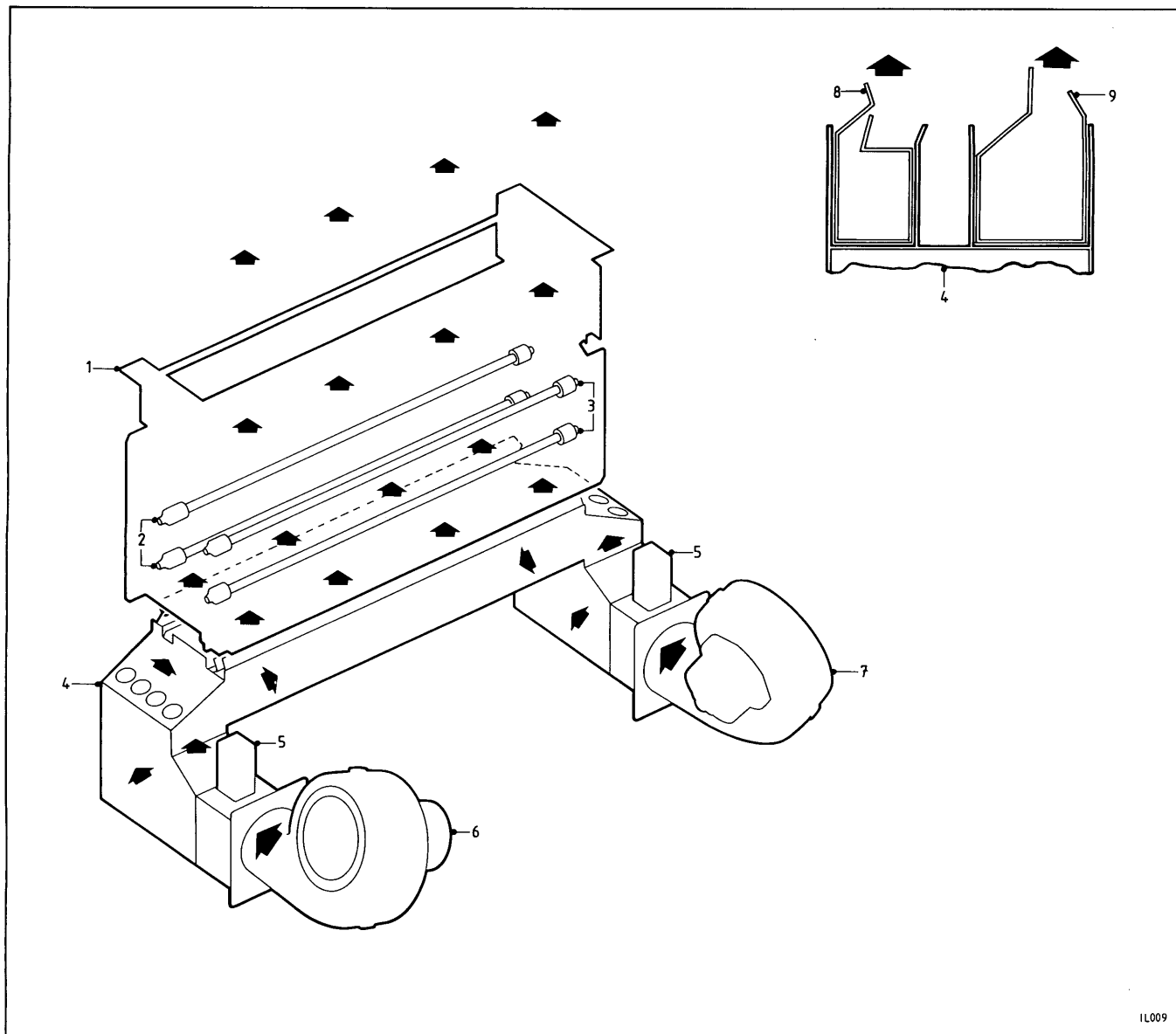
See figure 1.8.

Figure 1.8 shows the left hand fan. The air flow is the same for the right hand fan.

Air from the two fans is ducted through the air box, and exits via two air nozzles seated on top of the air box below the dryer rack. The air nozzle towards the front of the processor directs air towards the 400W dryer heaters, and the air nozzle towards the rear of the processor directs air towards the 750W dryer heaters. The air nozzles are not interchangeable and are designed to give optimum heat distribution through the dryer compartment for good quality drying.

Figure 1.8

- 1 Dryer rack
- 2 Heater, 750W (H3, H4)
- 3 Heater, 400W (H1, H2)
- 4 Air box
- 5 Fan safety switch (SW7, SW8)
- 6 Fan, left hand (M1)
- 7 Fan, right hand (M2)
- 8 Air nozzle, rear
- 9 Air nozzle, front



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Dryer rack - air system
▶ Figure 1.8 ◀

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2-2**REMOVAL
AND
INSTALLATION**

- ▶ 2.1 Drive chain (all motors)
See figures 1.2 and 2.1.

Removal

To remove the drive chain, proceed as follows:

- 1 Isolate the processor from the mains electrical supply.
- 2 Remove the processor top cover and the left hand upper side panel.
- 3 Slacken the two screws securing the drive motor assembly to the processor frame.
- 4 Lift the motor assembly and disengage the chain from the motor sprocket.
- 5 Slacken the grub screw securing the sprocket to the front of the layshaft and slide the sprocket, complete with chain, off the layshaft. Disengage the chain from the sprocket.

Installation

Ensure the correct replacement chain is supplied (see section 2-1.2). To install the chain, proceed as follows:

- 1 Engage the chain on the layshaft sprocket and slide this assembly onto the front of the layshaft, ensuring the grub screw is aligned with the flat on the layshaft. Tighten the grub screw. Allow the chain to hang freely.
- 2 Lift the drive motor assembly and engage the chain on the motor sprocket.
- 3 Tension the chain by allowing the weight of the drive motor to take up the slack in the chain. Excess slack can be removed by rotating the layshaft by hand.

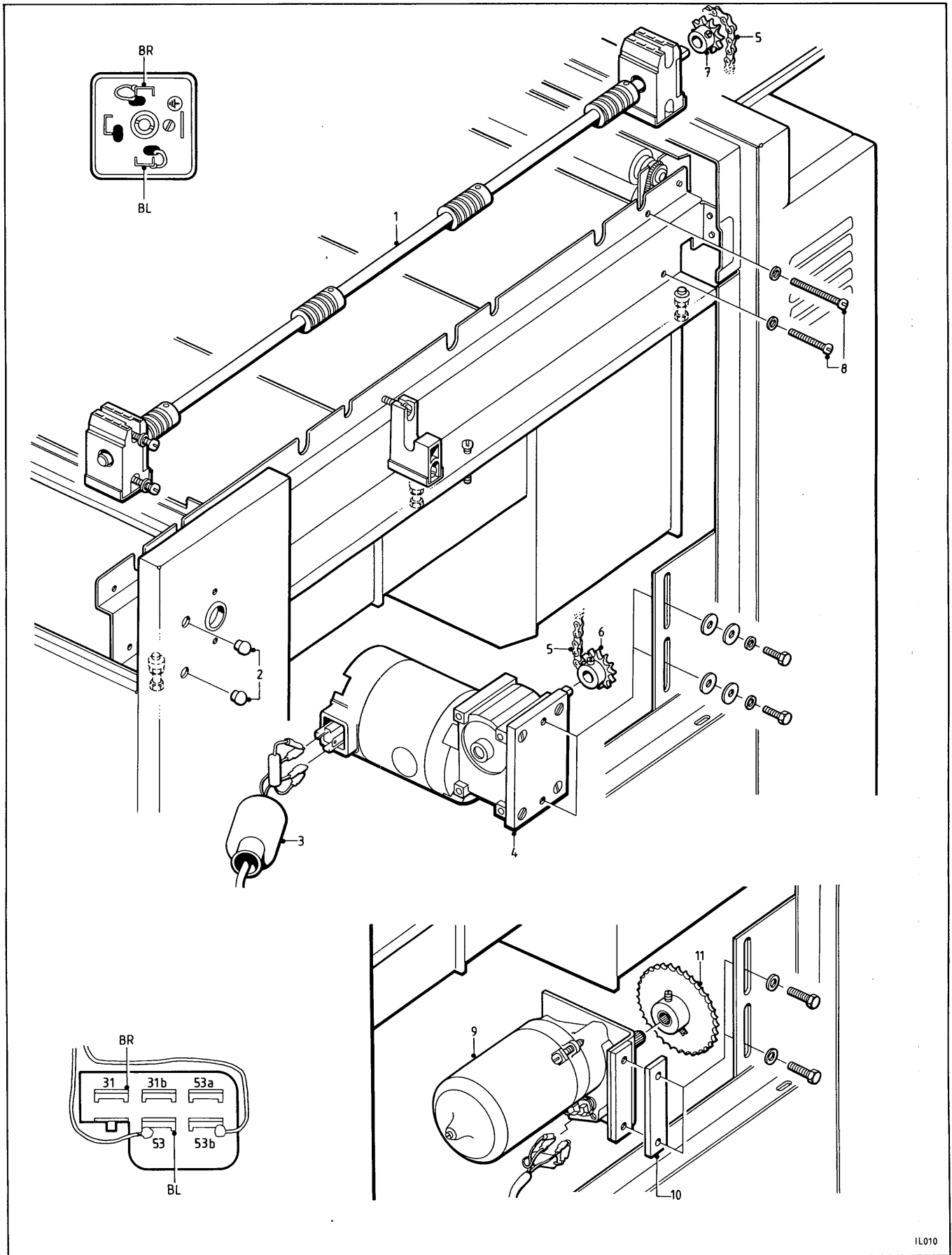
Note

As a guide, the total deflection in the middle of one leg of the chain should be approximately 9mm (0.4 inches).

- 4 Tighten the two screws securing the drive motor assembly to the processor frame.
- 5 Visually check the vertical alignment of the chain against the processor frame. If adjustment is necessary, slacken the grub screw securing the chain sprocket to the layshaft. Move the sprocket on the layshaft until vertical alignment of the chain is achieved. Re-tighten the sprocket grub screw.
- 6 Lubricate the chain with a light smear of Rocol MT265 grease.

To ensure correct operation of the drive assembly, carry out the following running test:

- 7 Switch the processor on.
- 8 Check for smooth running of the chain. If the chain rattles or wanders excessively, stop the processor and re-adjust the chain tension (see operations 3 and 4 above) and/or the vertical alignment of the chain (see operation 5 above).
- 9 Repeat operations 7 and 8 until the chain runs smoothly without excessive noise.



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Figure 2.1

- 1 Layshaft
- 2 Rubber blanking plugs
- 3 Rubber boot
- 4 Drive motor (processors from serial number 21810)
- 5 Drive chain
- 6 Drive motor sprocket (processors from serial number 21810)
- 7 Sprocket, layshaft
- 8 Securing screw - front bearing assembly
- 9 Drive motor (processor up to serial number 21809)
- 10 Spacer
- 11 Drive motor sprocket (processors up to serial number 21809)

2.2 Drive motor

See figure 2.1.

Processors from serial number 21810 are fitted with a new, more reliable drive motor that is sealed for life. To fit the new drive motor to processors up to serial number 21809, see 2.3 below. To replace the drive motor brushes on processors up to serial number 21809, see 2.5 below.

Removal

To remove the drive motor, proceed as follows:

- 1 Isolate the processor from the mains electrical supply.
- 2 Remove the processor top cover and the left hand upper side panel.
- 3 On processors from serial number 21810, carefully pull the rubber boot away from around the electrical connections on the drive motor.
- 4 Disconnect the two electrical connections from the drive motor.
- 5 Release the two screws and washers securing the motor bracket to the processor frame.
- 6 Lift the motor assembly and disengage the chain from the motor sprocket.
- 7 On processors up to serial number 21809, remove the drive motor assembly and spacer.
- 8 On processors from serial number 21810, remove the drive motor assembly.

Installation

To install a drive motor, proceed as follows:

- 1 Position the drive motor assembly and spacer (processors up to serial number 21809) on the inside of the processor frame, with the screw holes in the motor bracket (and spacer) aligned with the slotted holes in the processor frame, as shown.
- 2 Secure the motor assembly to the processor frame with the two screws and washers, as shown. Do not tighten the screws.
- 3 Lift the motor assembly to the top of the slotted holes and engage the chain on the motor sprocket.
- 4 Tension the chain (see 2.1, **Installation** procedure, operations 3 and 4 above).
- 5 Check the vertical alignment of the chain (see 2.1, **Installation** procedure, operation 5 above).
- 6 Connect the electrical cable to the drive motor as shown in the appropriate detail on figure 2.1.
- 7 On processors from serial number 21810, refit the rubber boot over the electrical connections, ensuring a complete seal is made all round.
- 8 Refit the processor top cover and the left hand upper side panel.

- 9 Carry out the running test detailed in 2.1, Installation procedure, operations 7-9 above.
 - 10 Check and, if necessary, adjust the motor speed. On processors up to serial number 21809 see section 4A-3.4, and on processors from serial number 21810 see section 4B-3.6.
- 2.3 Drive motor conversion kit - processors up to serial number 21809
See figure 2.1.

- Figure 2.2
- 1 Motor cover
 - 2 Securing screw - motor cover
 - 3 Rotor bearing
 - 4 Rotor assembly
 - 5 Brush spring
 - 6 Braided cable
 - 7 Brush
 - 8 Brush guide
 - 9 Bearing securing plate
 - 10 Securing screw - bearing securing plate

ILFORD 2240RC processors from serial number 21810 are fitted with a new drive motor. The new motor is available as a conversion kit (part number 00.016738) for fitting to processors up to serial number 21809. The conversion kit consists of a drive motor assembly, support plate, sprocket (20-teeth) and 720mm of chain (see section 2-1.2 above).

Installation

To install the new drive motor on processors up to serial number 21809, proceed as follows:

- 1 Remove the existing drive motor (see 2.2 above).
 - 2 Fit the sprocket supplied to the replacement drive motor shaft, with the screw hole in the sprocket aligned with the flat on the drive shaft. Secure the sprocket with the grub screw supplied.
 - 3 Secure the motor assembly to the processor mainframe (see 2.2 above).
 - 4 Fit the replacement chain (see 2.1 above).
 - 5 Check and, if necessary, adjust the motor speed. On processors up to serial number 21809 see section 4A-3.4, and on processors from serial number 21810 see section 4B-3.6.
- 2.4 Drive motor sprocket
See figure 2.1.

Removal

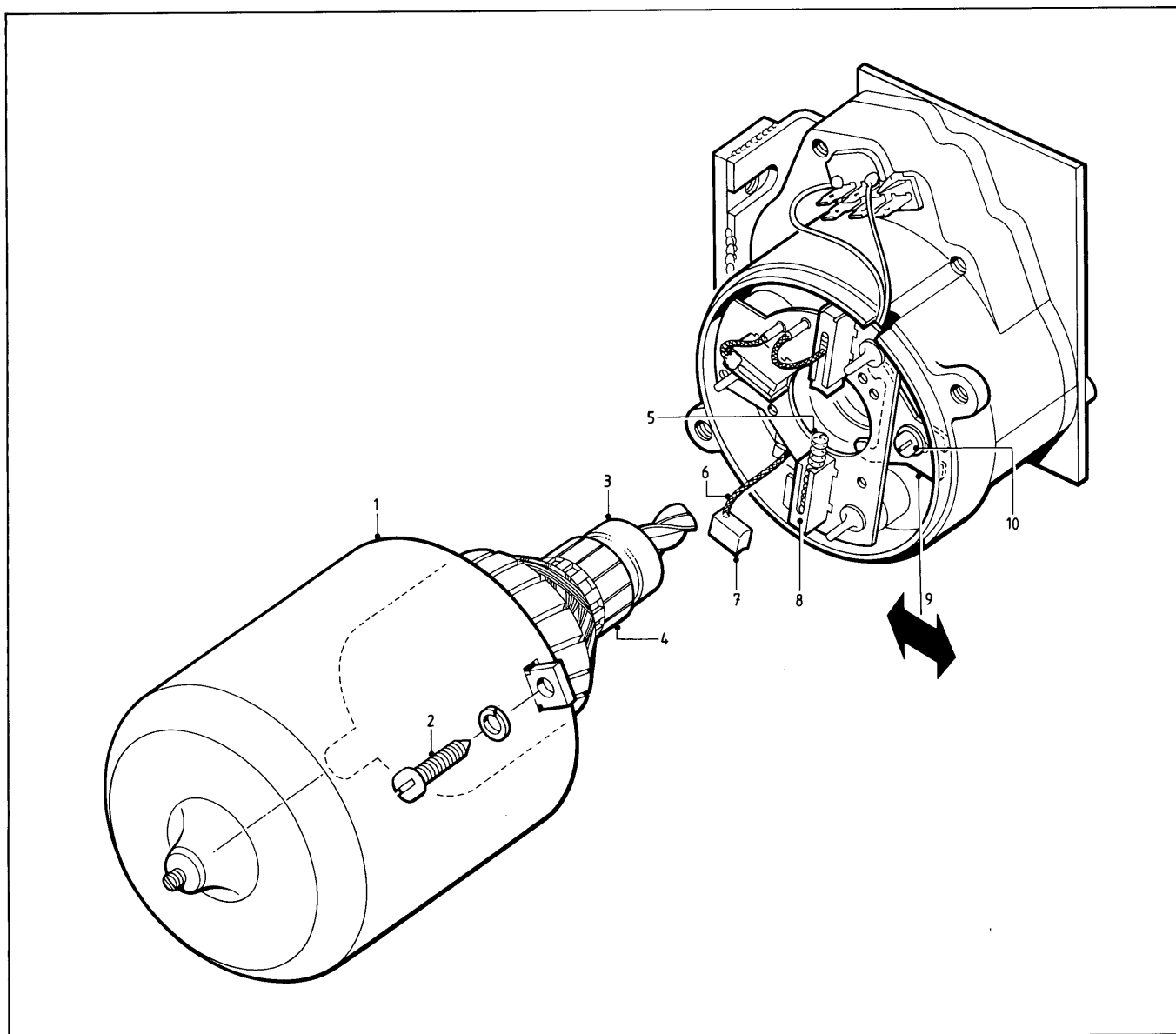
To remove the drive motor sprocket, proceed as follows:

- 1 Remove the drive motor (see 2.2 above)
- 2 Release the grub screw(s) and pull the sprocket off the motor shaft.

Installation

Ensure the correct replacement sprocket is supplied (see section 2-1.2 above). To install the drive motor sprocket, proceed as follows:

- 1 On processors up to serial number 21809, push the sprocket onto the motor shaft (splined), as shown.
- 2 On processors from serial number 21810, push the sprocket onto the motor shaft, as shown, with the screw hole in the sprocket flange aligned with the flat on the motor shaft.
- 3 Secure the sprocket with the grub screw(s).
- 4 Refit the drive motor (see 2.2 above).



Drive motor brushes
Figure 2.2

2.5 Drive motor brushes

See figure 2.2.

This sub-section applies to processors up to serial number 21809 that are fitted with the older type of drive motor. Processors from serial number 21810 are fitted with a new drive motor that is sealed for life.

Removal

To remove the drive motor brushes, proceed as follows:

- 1 Remove the drive motor (see 2.2 above).
- 2 Release the two screws securing the motor cover, and pull the cover away.

Note

A strong pull will be required to overcome the magnetic attraction between the motor windings and the cover.

- 3 Slacken the screw and slide the bearing securing plate away from the rotor assembly.
- 4 Carefully pull the rotor assembly away. The two motor brushes will spring out of their guides. Remove the two brush springs.

Note

The third brush (soldered away from the rotor assembly) is not used and should not be touched.

- 5 Snip the braided cable, connected to each of the brushes, to leave at least half the original length of cable. Discard the two brushes.

Installation

To install the drive motor brushes, proceed as follows:

- 1 Snip off the electrical connector supplied with the replacement brush, leaving the length of braided cable attached to the brush. Solder the cable to the end of the length of cable remaining from the removal sequence.
- 2 Fit the brush springs and brushes into the guides and retain the brushes with sticky tape.
- 3 Refit the rotor assembly.
- 4 Remove the tape retaining the brushes. Ensure the brushes make good contact with the rotor.
- 5 To prevent damaging the rotor assembly, remove the screw brackets from the motor cover and refit the cover.
- 6 Refit the screw brackets and secure the cover with the two screws and washers.
- 7 Refit the drive motor (see 2.2 above).

2.6 Layshaft

See figures 2.1 and 2.3.

Removal

To remove the layshaft, proceed as follows:

- 1 Isolate the processor from the mains electrical supply.
- 2 Remove the processor top cover, anti-splash panel, dryer grille and the left hand upper side panel.
- 3 Lift out the developer, fixer, wash and dryer racks.
- 4 Remove the drive chain (see 2.1 above).
- 5 Pull out the two rubber blanking plugs from the top of the left hand rear upright panel to gain access to the two screws securing the rear bearing housing to the processor frame. Release the two screws.
- 6 Release the two screws securing the front bearing housing to the processor frame.
- 7 Lift the layshaft, complete with the front and rear bearing assemblies, away.
- 8 Pull the front bearing assembly off the layshaft.

The rear bearing assembly is held in position on the layshaft by a circlip. To remove the rear bearing assembly, proceed as follows:

- 9 Release the four screws and washers securing the two sections of the bearing housing.
- 10 Pull the rear section of the bearing housing off the layshaft to expose the bearing and two circlips.
- 11 Remove the circlips using circlip pliers.
- 12 Pull the bearing and front section of the bearing housing off the layshaft.

Installation

To install the layshaft, proceed as follows:

- 1 Push the front bearing assembly onto the front end of the layshaft (the end with the flat).
- 2 At the rear end of the layshaft, push the front section of the rear bearing housing onto the layshaft, and refit one of the circlips removed from the original layshaft into the layshaft forward groove, using circlip pliers.
- 3 Push the rear bearing onto the layshaft.
- 4 Refit the second circlip into the layshaft rear groove, using circlip pliers.
- 5 Push the rear section of the bearing housing over the bearing.
- 6 Secure the two sections of the rear bearing housing with the four screws and washers.
- 7 Ensure the two securing screws and washers are located in the front and rear bearing assemblies, with the longer screw located in the upper hole.

Note

It is important to locate the screws and washers in the rear bearing assembly prior to positioning the layshaft, since this cannot be done once the layshaft is in position.

- 8 Position the layshaft assembly on the processor, with the screws in the front and rear bearing assemblies aligned with the holes in the processor frame. Move the front bearing assembly on the layshaft until the holes are aligned.
- 9 Secure the rear bearing assembly then the front bearing assembly to the processor frame, each with the two screws located in operation 7. Do not fully tighten the screws.

Note

Access to the rear bearing assembly securing screws is through the two holes in the top of the left hand rear upright panel.

- 10 Refit the developer, fixer, wash and dryer racks. Ensure the helical gear on each rack meshes correctly with the layshaft worm gears and, at the same time, the rack support pins are all seated correctly on the processor frame. If adjustment of the layshaft is necessary, see 2.7 below.

Note

To check the gears and rack support pins on the dryer rack, remove the PVC blanking plug and view through the hold in the left hand rear upright panel.

- 11 Tighten the screws securing the front and rear bearing assemblies.
- 12 Refit the chain (see 2.1 above).
- 13 Reset the chain tension and vertical alignment (see 2.1, Installation procedure, operations 3-5 above).
- 14 Refit the two rubber blanking plugs into the holes in the top of the left hand rear upright panel.
- 15 Grease the items as detailed in table 2.1 below.
- 16 Refit the processor top cover, dryer grille, anti-splash panel and the left hand upper side panel.
- 17 Carry out the running check detailed in 2.1, Installation procedure, operations 7-9 above.

Figure 2.3

- 1 Bearing housing - rear section
- 2 Circlip
- 3 Bearing
- 4 Bearing housing - front section
- 5 Securing screw - bearing housing sections
- 6 Layshaft
- 7 Sprocket, layshaft
- 8 Dryer rack
- 9 Wash rack
- 10 Fixer rack
- 11 Developer rack
- 12 Bearing adjusting screw
- 13 PVC blanking plug
- 14 Intermediate support
- 15 Rack support pin (typical)
- 16 Helical gear (typical)

Table 2.1 Lubricants - layshaft assembly

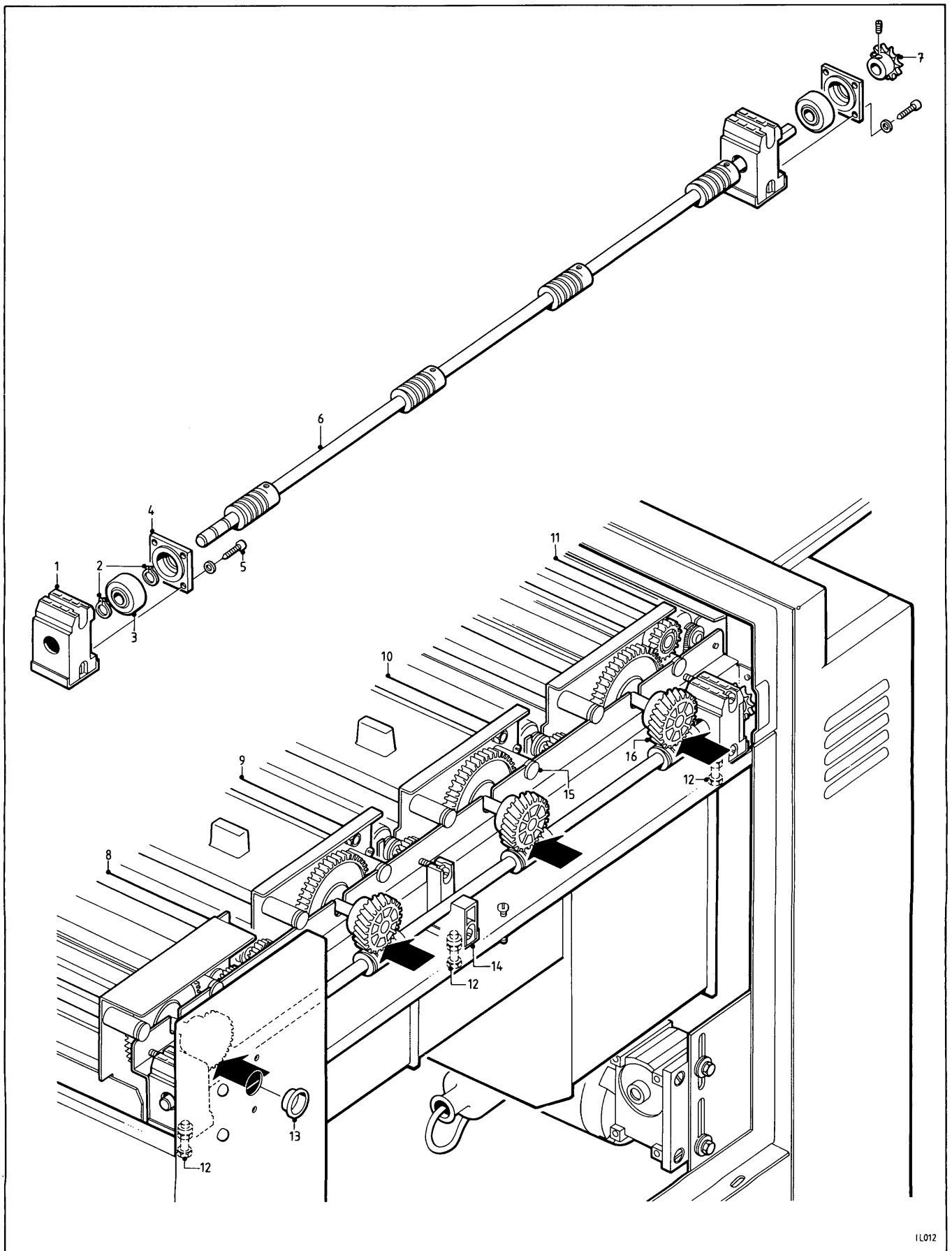
Component	Lubricant
Layshaft intermediate support.	Rocol MT265 - light smear, as required.
Layshaft worm gears.	Silicone grease - light smear, as required.
Drive motor chain.	Rocol MT265 - light smear, every 3 months.

2.7 Layshaft adjustment

See figure 2.3.

To adjust the layshaft, proceed as follows:

- 1 Remove the processor top cover, anti-splash panel, dryer grille and the left hand upper side panel.
- 2 Ensure the processor is level (see the ILFORD 2240RC Installation manual, section 3.2).
- 3 Slacken the two screws securing the drive motor to the processor frame. Push the motor up to the top of the adjustment slots and re-tighten the securing screws.
- 4 Slacken the two screws securing each of the front and rear bearing assemblies and the intermediate support to the processor frame.
- 5 Vary the height of the front bearing assembly, by adjusting the front height adjusting screw below the processor left hand rack support section, until the layshaft front worm gear meshes with the developer rack helical gear. Ensure the developer rack support pins are all seated correctly on the processor frame.
- 6 Repeat operation 5 for the rear bearing assembly. In this case adjustments are made using the rear height adjusting screw, and adjustment is correct when the layshaft rear worm gear meshes with the dryer rack helical gear.



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Layshaft dismantling and adjustment
▶ Figure 2.3 ◀

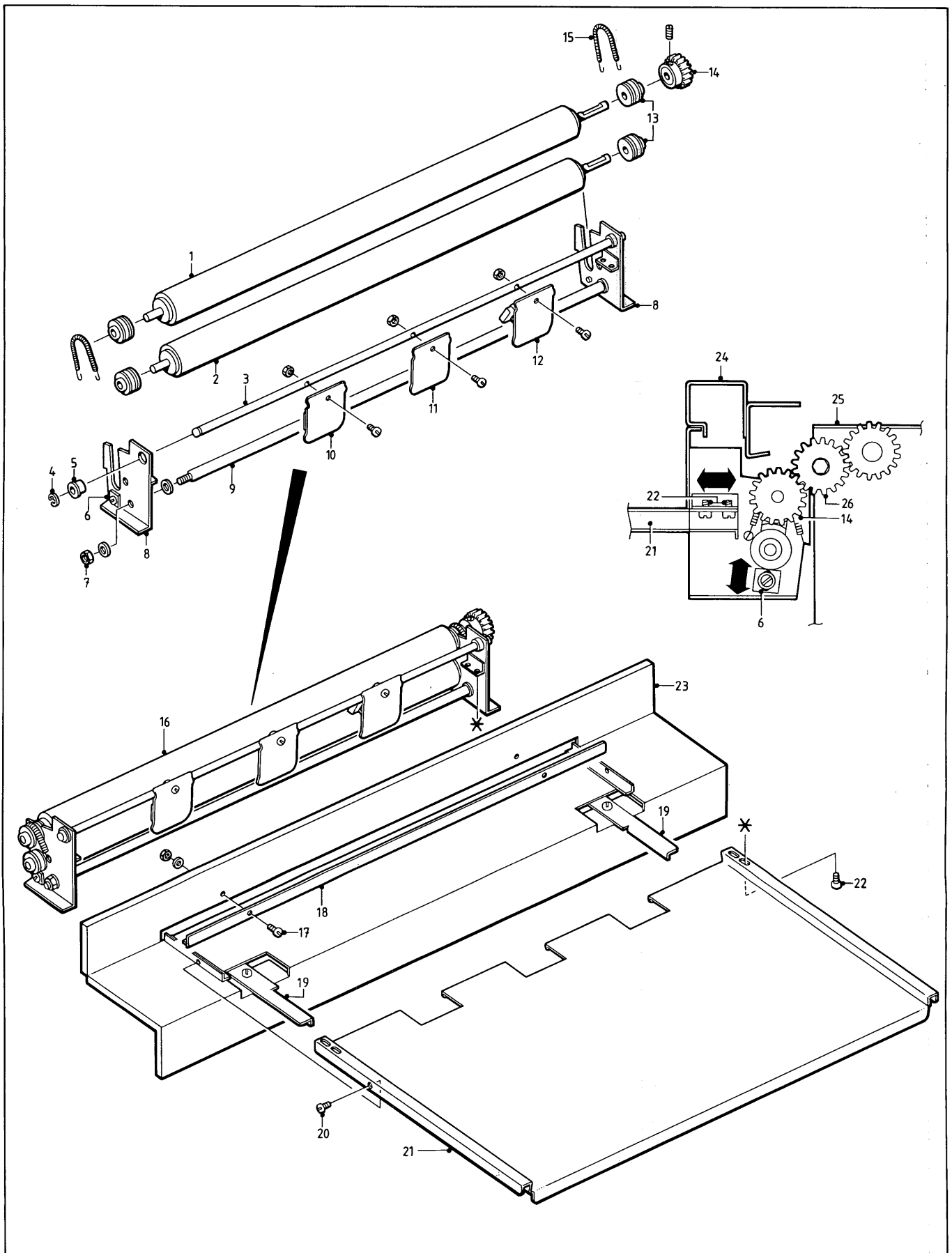


Figure 2.4

- 1 Upper roller (PVC)
- 2 Lower roller (rubber)
- 3 Detector rod
- 4 Circlip
- 5 Bearing - detector rod
- 6 Detector roller adjuster
- 7 Nut - tie rod
- 8 Side plate
- 9 Tie rod
- 10 Detector flap, heavy
- 11 Detector flap, light
- 12 Detector flap, magnet holder
- 13 Roller bearing
- 14 Drive take up gear
- 15 Roller spring
- 16 Roller assembly
- 17 Securing screw - inlet guide
- 18 Inlet guide
- 19 Locking lever
- 20 Securing screw - feed tray to inlet frame
- 21 Feed tray
- 22 Securing screws - feed tray to input detector assembly
- 23 Inlet frame
- 24 Processor frame
- 25 Developer rack
- 26 Processor drive take off

Note

Remove the PVC blanking plug and view through the hole in the left hand rear upright panel.

- 7 Vary the height of the intermediate support by adjusting the centre height adjusting screw.

Note

Adjustment is correct when the intermediate support just makes contact with the layshaft, without causing any bowing of the layshaft.

- 8 Tighten the screws securing the front and rear bearing assemblies and the intermediate support.
- 9 Reset the chain tension and, if necessary, the vertical alignment (see 2.1, Installation procedure, operations 3-5 above).
- 10 Refit the processor top cover, dryer grille, anti-splash panel and the left hand upper side panel.

2.8 Input detector assembly - rollers

See figure 2.4.

Removal

To remove the input detector assembly rollers, proceed as follows:

- 1 Remove the paper feed tray and input detector assembly by moving the two locking levers, located below the feed tray, sideways and pulling the assembly away from the processor.
- 2 Remove the two roller springs.
- 3 Lift the two rollers from the assembly.

On the upper roller (pvc),

- 4 Release the grub screw and pull the gear off the roller shaft.
- 5 Pull the two bearings off the roller shaft.

On the lower roller (rubber),

- 6 Pull the two bearings off the roller shaft.

Installation

To install the input detector assembly rollers, proceed as follows:

On the lower roller (rubber),

- 1 If the old bearings are showing signs of wear, fit new bearings, as shown.

On the upper roller (pvc),

- 2 If the old bearings are showing signs of wear, fit new bearings, as shown.
- 3 Push the gear onto the shaft with the screw hole aligned with the flat on the shaft, as shown. Do not tighten the grub screw at this stage.

- 4 Refit the rollers with the bearings located in the end plate slots, as shown.
- 5 Refit the roller springs.
- 6 Refit the paper feed tray and input detector assembly by moving the two locking levers sideways and sliding the assembly into the processor housing until it is hard against the processor frame. Release the locking levers to lock the assembly in position.
- 7 Remove the processor lid.
- 8 Adjust the position of the input detector gear on the roller shaft until the gear meshes correctly with the gear on the developer rack. See also 2.12 below.
- 9 With the gears meshing correctly, tighten the grub screw securing the input detector gear.
- 10 Refit the processor lid.
- 11 Process a few sheets of fogged paper and check for scratches on the emulsion surface.

2.9 Input detector assembly - paper feed tray

See figure 2.4.

Removal

To remove the paper feed tray, proceed as follows:

- 1 Remove the paper feed tray and input detector assembly by moving the two locking levers, located below the feed tray, sideways and pulling the assembly away from the processor.
- 2 Release the four screws and remove the input detector assembly from the feed tray.
- 3 Release the two screws, nuts and washers and remove the inlet guide from the inlet frame.
- 4 Release the two screws securing the paper feed tray to the inlet frame and withdraw the feed tray forwards.

Installation

To install the paper feed tray, proceed as follows:

- 1 Locate the paper feed tray through the inlet frame from the front. Secure the paper feed tray with the two screws.
- 2 Secure the inlet guide to the inlet frame with the two screws, nuts and washers.
- 3 Secure the input detector assembly to the paper feed tray, as shown, with the four screws.
- 4 Ensure the input detector rollers and detector flaps move freely.
- 5 Refit the paper feed tray and input detector assembly by moving the two locking levers sideways and sliding the assembly into the processor housing until it is hard against the processor frame. Release the locking levers to lock the assembly in position.
- 6 Ensure the input detector gear meshes correctly with the developer rack gear. If adjustment is necessary, see 2.12 below.

- 7 Remove the protective film from the replacement feed tray.
- 8 Process a few sheets of fogged paper and check for scratches on the emulsion surface.

2.10 Input detector assembly - detector flaps

See figure 2.4.

Removal

To remove the detector flaps, proceed as follows:

- 1 Remove the paper feed tray and input detector assembly by moving the two locking levers, located below the feed tray, sideways and pulling the assembly away from the processor.
- 2 Release the four screws securing the input detector assembly to the feed tray and lift the input detector away.
- 3 Release the screw, nut and washer securing each of the three detector flaps to the detector bar.

Installation

To install the detector flaps, proceed as follows:

- 1 Secure each of the detector flaps to the detector bar with the single screw, nut and washer, as shown.
- 2 Secure the input detector assembly to the feed tray with the four screws, as shown.
- 3 Ensure the detector flaps move freely.
- 4 Refit the paper feed tray and input detector assembly by moving the two locking lever sideways and sliding the assembly into the processor housing until it is hard against the processor frame. Release the locking levers to lock the assembly in position.
- 5 Process a few sheets of fogged paper and check for scratches on the emulsion surface.

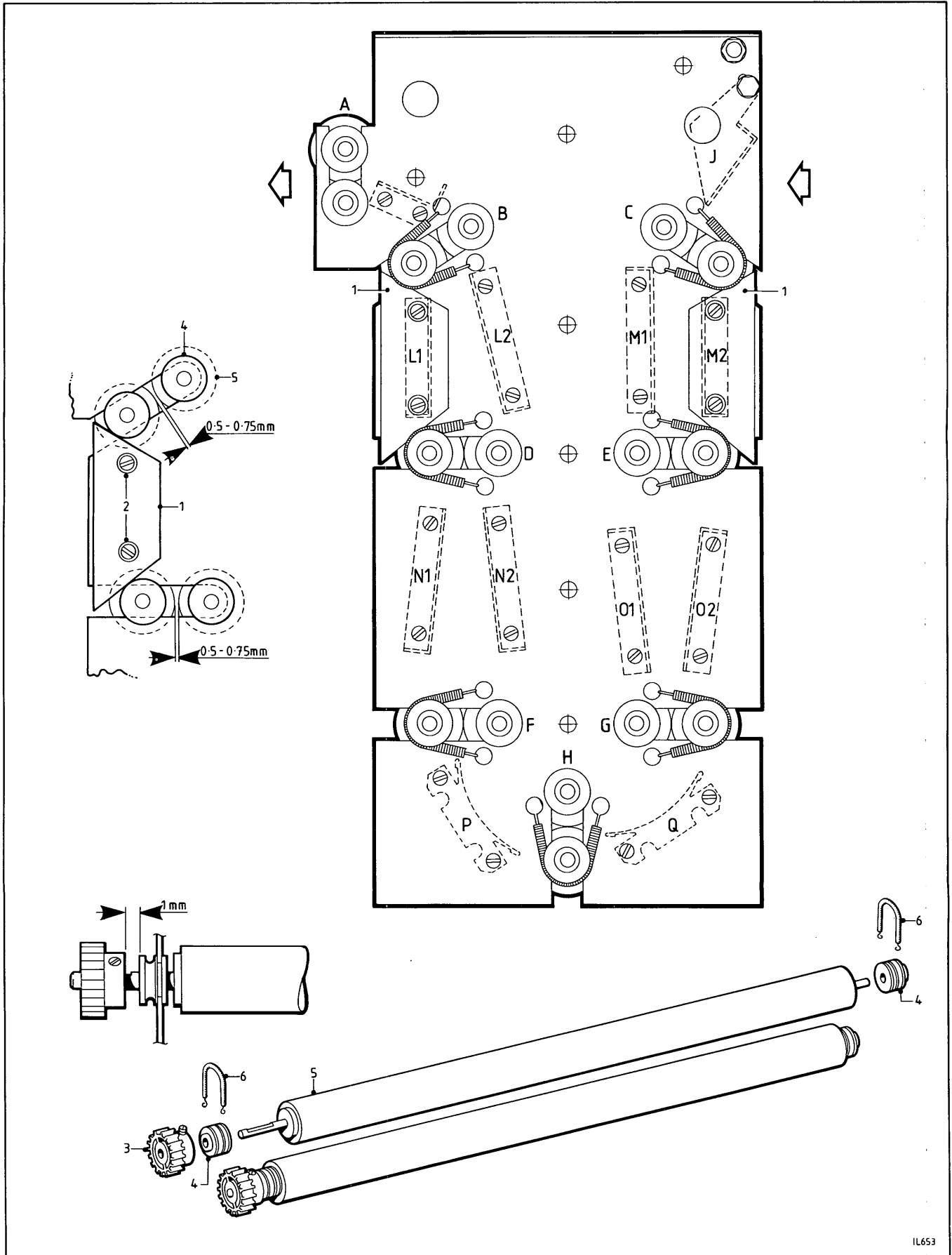
2.11 Input detector assembly - detector rod and bearings/tie rod

See figure 2.4.

Removal

To remove the detector rod and bearings and the tie rod, proceed as follows:

- 1 Remove the paper feed tray and input detector assembly by moving the two locking levers, located below the feed tray, sideways and pulling the assembly away from the processor.
- 2 Remove the two rollers (see 2.8 above).
- 3 Remove the paper feed tray (see 2.9 above).
- 4 Remove the three detector flaps (see 2.10 above).
- 5 Using circlip pliers, remove the circlip from each end of the detector rod.
- 6 Remove the nut and outer washer from each end of the tie rod.

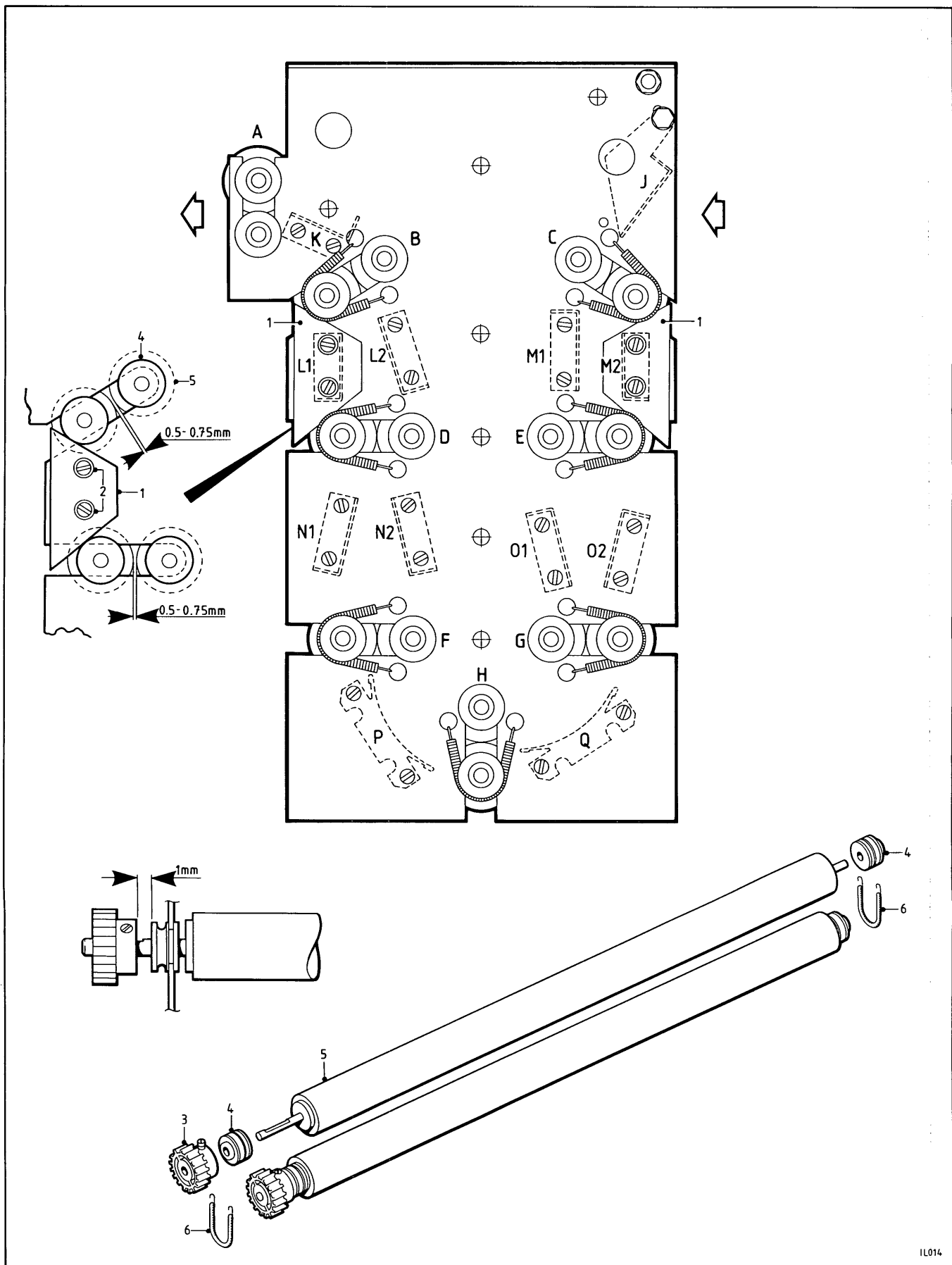


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► Developer rack - rollers and guides from serial number 23180
36 Figure 2.5a ◀

- ▶ **Figure 2.5a**
- 1 Roller retaining plate
- 2 Securing screw - roller retaining plate
- 3 Roller gear
- 4 Roller bearing
- 5 Roller (typical)
- 6 Roller spring ◀

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▶ **Figure 2.5b** ◀

- 1 Roller retaining plate
- 2 Securing screw - roller retaining plate
- 3 Roller gear
- 4 Roller bearing
- 5 Roller (typical)
- 6 Roller spring

- 7 Carefully pull the two side plates away and remove the two inner washers from the tie rod.
- 8 Carefully press the detector rod bearings out of the side plates.

Installation

To install the detector rod and bearings and the tie rod, proceed as follows:

- 1 Carefully press the replacement bearings into the side plates, as shown.
- 2 Fit one of the inner washers onto the tie rod and locate this end into the appropriate side plate. Secure the tie rod with the nut and outer washer.
- 3 Locate the detector rod through the bearing in the same side plate and secure the rod with the circlip.
- 4 Repeat operations 2 and 3 with the other side plate.
- 5 Refit the detector flaps (see 2.10 above).
- 6 Refit the paper feed tray (see 2.9 above).
- 7 Refit the rollers (see 2.8 above).
- 8 Ensure the detector flaps move freely.
- 9 Refit the paper feed tray and input detector assembly by moving the two locking levers sideways and sliding the assembly into the processor housing until it is hard against the processor frame. Release the locking levers to lock the assembly in position.

2.12 Input detector assembly - roller adjustment

See figure 2.4.

To adjust the mesh of the input detector gear with the developer rack gear, proceed as follows:

- 1 With the feed tray and detector roller assembly in situ, insert two or three sheets of photographic paper between the detector rollers.
- 2 Slacken the screw securing the detector roller adjusters; one on each of the left and right hand side plates.
- 3 Raise or lower the two adjusters by equal amounts until the detector roller gear and the developer rack gear mesh correctly.
- 4 Tighten the roller adjuster screws.
- 5 Further adjustment can be made, if necessary, by slackening the four screws securing the input detector assembly to the paper feed tray, and moving the detector assembly relative to the paper feed tray. Tighten the four screws when a correct mesh is achieved.

2.13 Developer rack - rollers

- ▶ See figures 1.4, 2.5a and 2.5b. ◀

Removal**Roller pair A**

Carefully lift the two rollers away from the rack assembly.

Roller pairs B, C, D and E

The following sequence is the same for each roller pair.

- 1 Release the two screws and washers and remove the roller retaining plate from each side plate. At the same time, remove the outer guide L1 or M2; these guides are held in position by the same two screws.
- 2 Remove the two roller springs (one at each end) securing the roller pair to the side plate, as shown.
- 3 Carefully slide the two rollers away from the rack assembly.

Roller pair F

- 1 On guide P, remove the two upper screws and slacken the two lower screws.
- 2 Rotate the guide anti-clockwise to clear the rollers.
- 3 Remove the two roller springs (one at each end) securing the roller pair to the side plate, as shown.
- 4 Carefully slide the two rollers away from the rack assembly.

Roller pair G

- 1 Remove the two roller springs (one at each end) securing the roller pair to the side plate, as shown.
- 2 Carefully slide the two rollers away from the rack assembly.

Roller pair H

- 1 On guide Q, remove the two lower screws and slacken the two upper screws.
- 2 Rotate the guide anti-clockwise to clear the rollers.
- 3 Remove the two roller springs (one at each end) securing the roller pair to the side plate, as shown.
- 4 Carefully slide the two rollers away from the rack assembly.

Installation

- ▶ Refer to figures 2.5a, 2.5b and 1.4 and install all rollers in the correct configuration following the Removal sequences in reverse order.

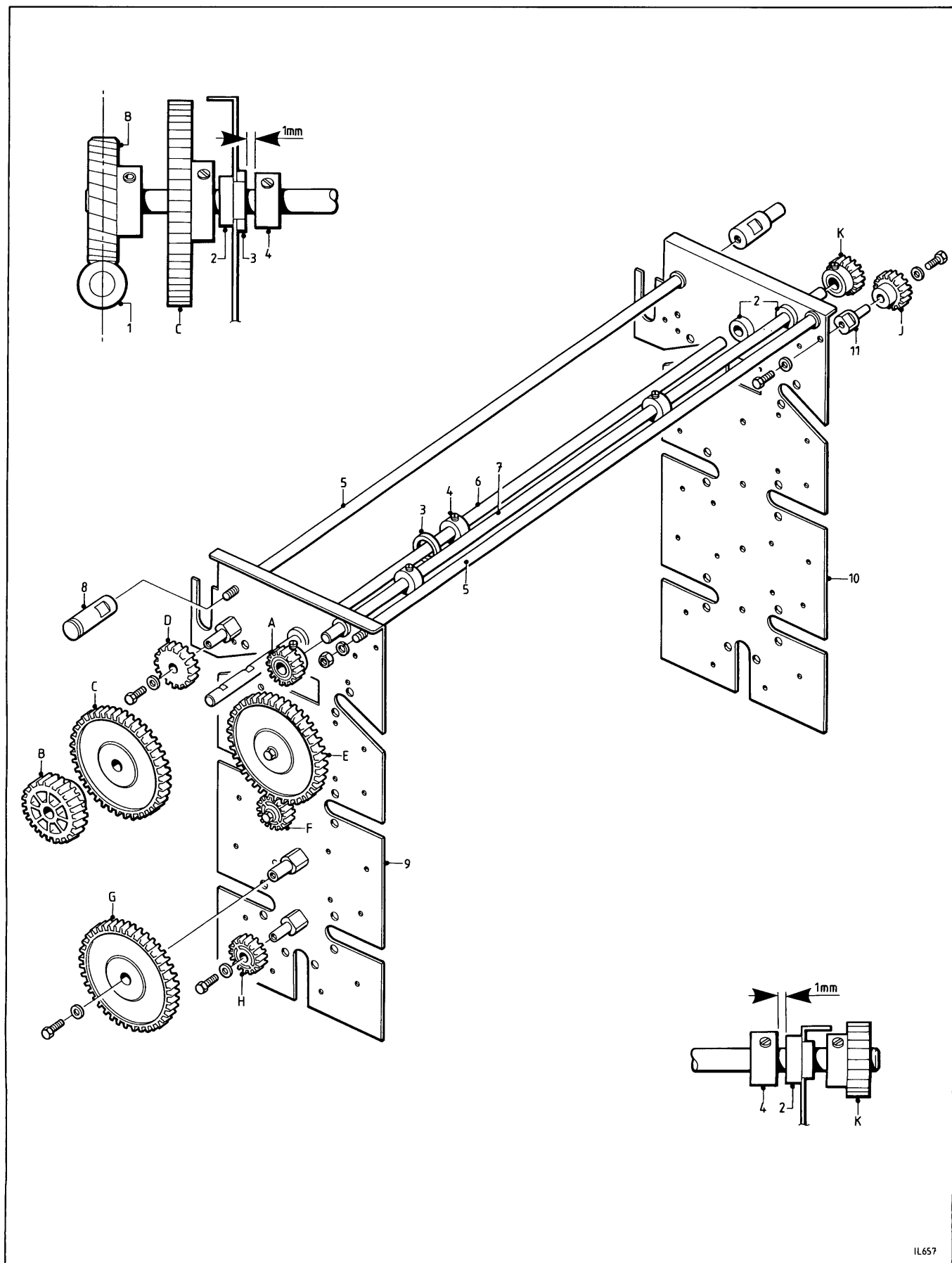
Roller adjustment

The following sequence applies to roller pairs B, C, D and E only, and must be carried out after roller replacement, to ensure correct paper transport through the rollers when the processor is at normal operating temperature.

- 1 Position a thickness of two or three sheets of photographic paper (0.5-0.75mm) between the pairs of rollers, as shown in the detail on figures 2.5a and 2.5b.
- 2 Slacken the two screws on one retaining plate and, with the two inner rollers hard against the stop in the side plate, adjust the retaining plate until it stops against the bearings of the two outer rollers. Fully tighten the screws.
- 3 Repeat the above on the other retaining plate.

▶ Figure 2.6a

- 1 Worm gear, layshaft
- 2 Bearing
- 3 Washer, drive shaft
- 4 Shoulder ring
- 5 Tie rod
- 6 Drive shaft
- 7 Transfer shaft
- 8 Rack support pin (typical)
- 9 Side plate, left hand
- 10 Side plate, right hand
- 11 Shaft, idler gear ◀



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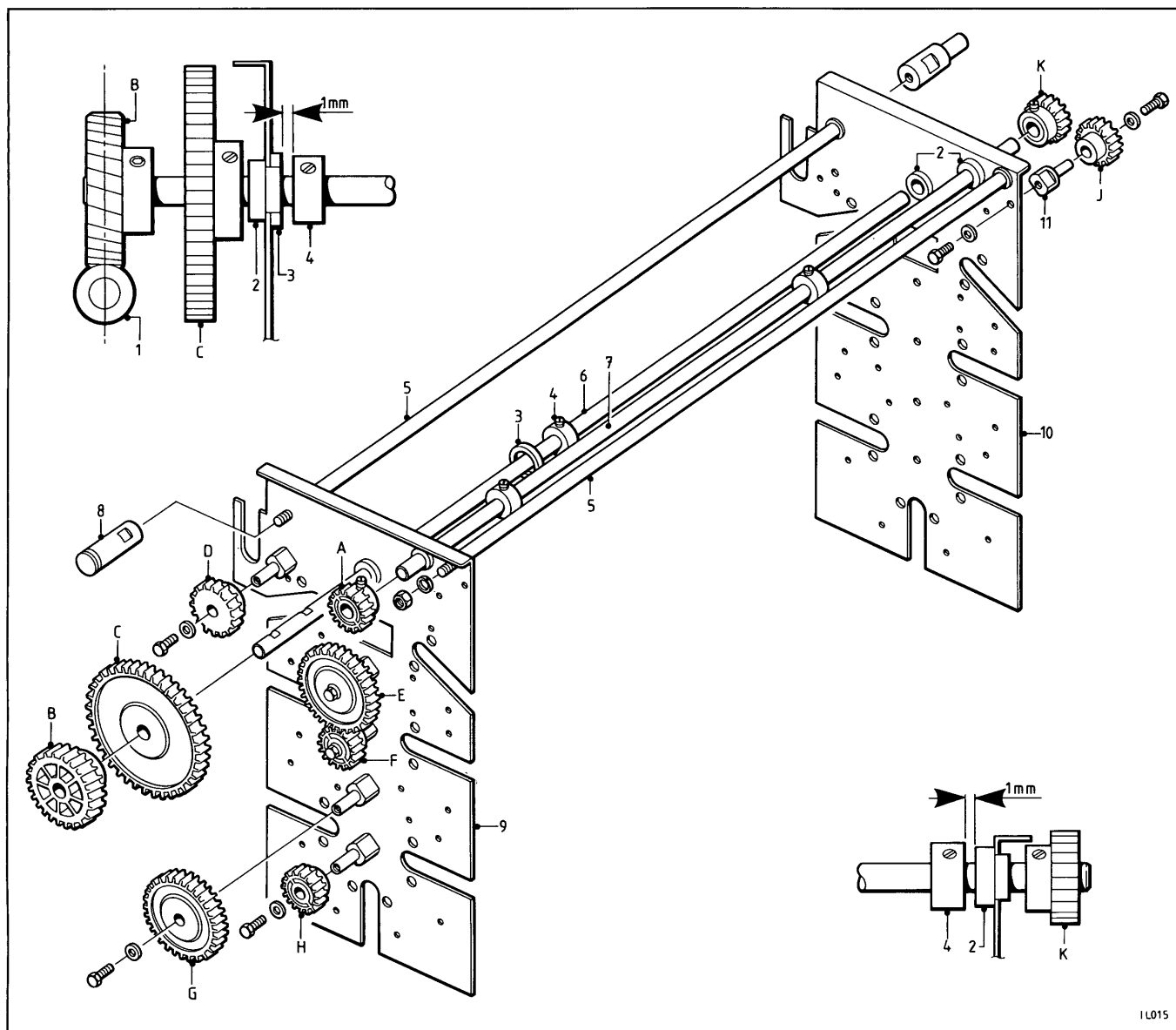
► Developer rack - drive assembly from serial number 23180
Figure 2.6a ◀

38a

Section 2-2

- **Figure 2.6b** ◀
- 1 Worm gear, layshaft
 - 2 Bearing
 - 3 Washer, drive shaft
 - 4 Shoulder ring
 - 5 Tie rod
 - 6 Drive shaft
 - 7 Transfer shaft
 - 8 Rack support pin
(typical)
 - 9 Side plate, left hand
 - 10 Side plate, right hand
 - 11 Shaft, idler gear

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1L015

► Developer rack - drive assembly up to serial number 23179
 Figure 2.6b ◀

2.14 Developer rack - roller gears and bearings

► See figures 2.5a and 2.5b. ◀

Note

► The following sequence applies to all rollers. Figures 2.5a and 2.5b show a typical roller assembly. All roller gears are secured by a single grub screw. ◀

Removal

- 1 Remove the roller(s) (see 2.13 above).
- 2 Release the grub screw and pull the gear away from the roller shaft.
- 3 Slide the two bearings off the roller shaft.

Installation

- 1 Slide the two bearings onto the roller shaft, as shown.
- 2 Push the gear onto the roller shaft, as shown. Do not tighten the grub screw.
- 3 Refit the roller(s) (see 2.13 above).
- 4 Check the vertical alignment of the gear. In all cases ensure the replacement gear(s) meshes correctly with all adjacent gears. To allow for adequate end float, a minimum clearance of 1mm must be maintained between the gear and bearing. Secure all replacement gears with the grub screw.

2.15 Developer rack - paper guides

- ▶ See figures 2.5a, 2.5b, 2.6a and 2.6b. ◀

Note

In all the following sequences, the appropriate roller(s) must first be removed (see 2.13 above).

Removal**Guide J**

- 1 Release the hexagonal head screw and washer securing the rack support pin and the lower securing point of guide J to the left hand side plate.
- 2 Release the hexagonal head screw, washers and nut securing the upper securing point of guide J to the left hand side plate.
- 3 Release the hexagonal head screw and washer securing the idler gear shaft and the upper securing point of guide J to the right hand side plate.
- 4 Release the hexagonal head screw and washer securing the rack support pin and lower securing point of guide J to the right hand side plate.
- 5 Carefully remove the guide from the rack.

Guides L1 and M2

See 2.13, roller pairs B, C, D and E above.

Guides K, L2, M1, N1, N2, O1 and O2

Each guide is supported by four screws and is not secured. Slacken the four screws and carefully remove the guide.

Guides P and Q

Release the four screws, nuts and washers (two on each side) securing each guide to the side plates. Carefully remove the guide.

Installation**CAUTION**

To avoid print jams and scratches on prints, ensure all replacement guides are not bowed. Remove any edge burrs from replacement guides.

Thoroughly clean all replacement guides.

- ▶ Refer to figures 2.5a and 2.5b and install all guides in their correct orientation following the Removal sequences in reverse order. ◀

Note

There are no adjustments to the guides when they are in position.

2.16 Developer rack - drive gears

- ▶ See figures 2.6a and 2.6b. ◀

Removal

- ▶ Gears A, B, C and K ◀
Release the grub screw and pull the gear off the shaft.
- ▶ Gears D, E, F, G, H and J (idler gears) ◀
Release the hexagonal head screw and washer and pull the gear off the shaft.

Installation

- 1 In all cases, push the gear onto the shaft as shown and secure it either with the grub screw or with the hexagonal head screw and washer as appropriate.
- 2 Check the vertical alignment of the gear. In all cases, the replacement gear(s) must mesh correctly with all adjacent gears. As a general rule, use the idler gears as a datum, to align all other gears.
- 3 For gear B, refit the developer rack and ensure the centre line of gear B is aligned with the centre line of the layshaft gear.

2.17 Developer rack - drive shaft

- ▶ See figures 2.6a and 2.6b. ◀

Removal

- 1 Release the grub screw securing the shoulder ring to the drive shaft.
- 2 Remove gears B and C from the drive shaft (see 2.16 above).
- 3 Withdraw the drive shaft taking care not to allow the shoulder ring and washer to fall into the rack assembly.

Installation

- 1 Refit the gears to the drive shaft (see 2.16 above).
- 2 Locate the drive shaft through the left hand side plate bearing and refit the washer and shoulder ring onto the shaft, as shown. Locate the shaft through the right hand side plate bearing.
- 3 Secure the shoulder ring with the grub screw, ensuring a minimum clearance of 1mm is maintained between the shoulder ring and washer to allow for adequate end float.
- 4 Re-align the centre line of gear B with the centre line of the layshaft gear.

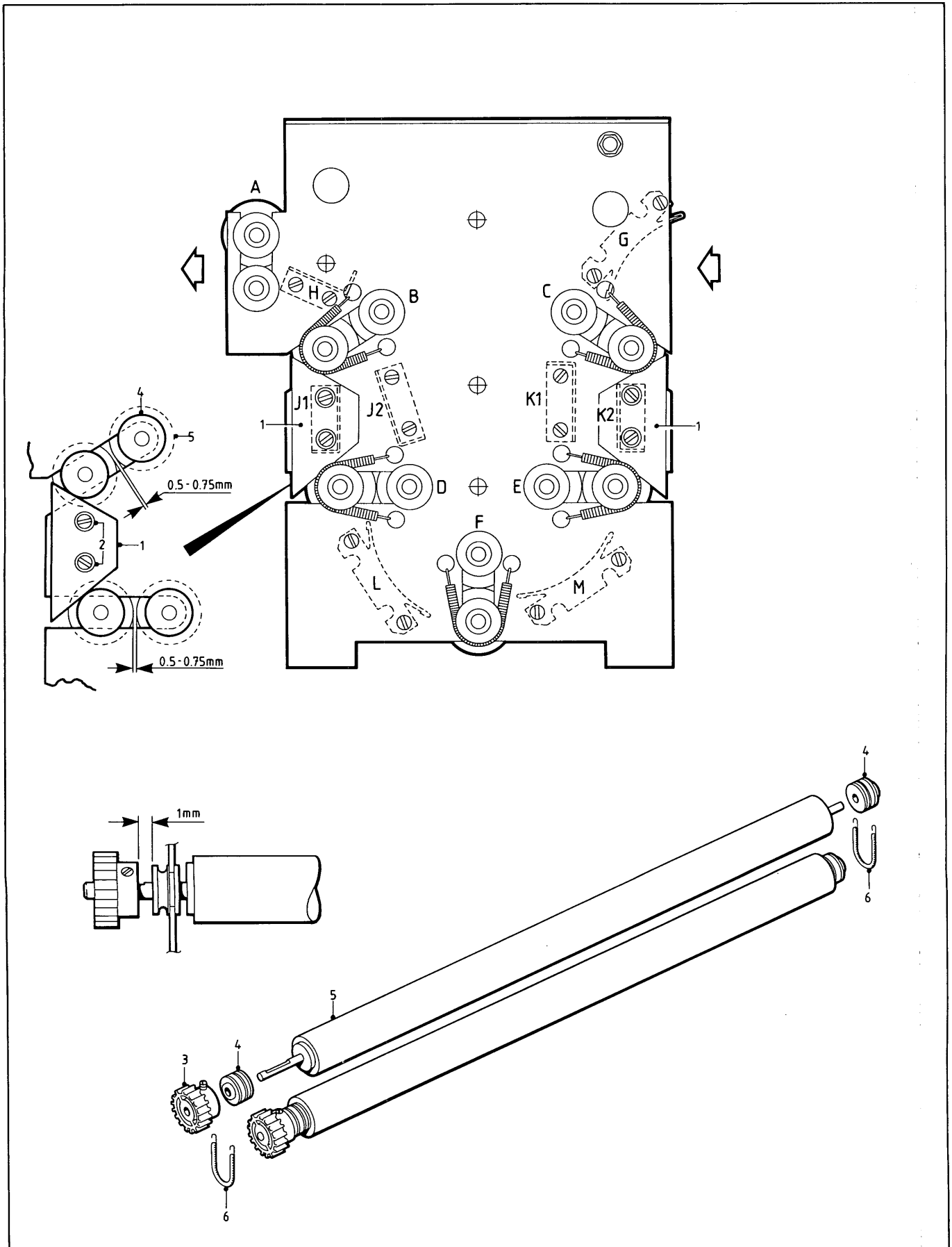


Figure 2.7

- 1 Roller retaining plate
- 2 Securing screw - roller retaining plate
- 3 Roller gear
- 4 Roller bearing
- 5 Roller (typical)
- 6 Roller spring

2.18 Developer rack - transfer shaft

▶ See figures 2.6a and 2.6b. ◀

Removal

- 1 Remove the gear from one end of the transfer shaft (see 2.16 above).
- 2 Release the grub screw securing each shoulder ring to the shaft.
- 3 Withdraw the shaft assembly taking care not to allow the shoulder rings to fall into the rack assembly.
- 4 Remove the remaining gear.

Installation

- 1 Refit one of the gears to one end of the transfer shaft (see 2.16 above).
- 2 Locate the shaft through the bearing in one of the side plates and refit the two shoulder rings. Locate the shaft through the opposite bearing.
- 3 Refit the remaining gear to the free end of the shaft. Ensure both gears mesh correctly with all adjacent gears.
- 4 Secure the two shoulder rings with the grub screws ensuring a minimum clearance of 1mm is maintained between each shoulder ring and bearing to allow for adequate end float.

2.19 Developer rack - tie rods and side plates

▶ See figures 2.6a and 2.6b. ◀

Dismantling

- 1 Carry out the removal sequences detailed in 2.13 - 2.18 above.
- 2 On the forward tie rod, release the nut and outer spring washer at each end of the rod.
- 3 On the rear tie rod, release the rack support pin at each end of the rod.
- 4 Separate the tie rods and side plates taking care not to lose the inner plain washers on each tie rod.
- 5 Remove all remaining gear shafts from the side plates by releasing the hexagonal head screws and washers.
- 6 Carefully press out all bearings remaining in the side plates.

Re-assembly

To re-assemble the developer rack, carry out the Dismantling sequence above, in reverse order. Replace bearings that are damaged or showing signs of wear. Ensure all rack support pins are refitted square against the side plates.

2.20 Fixer rack - rollers

See figures 1.5 and 2.7.

Removal

Roller pair A

Carefully lift the two rollers away from the rack assembly.

Roller pairs B, C and E

The following sequence is the same for each roller pair.

- 1 Release the two screws and washers and remove the roller retaining plate from each side plate. At the same time, remove the outer guide J1 or K2; these guides are held in position by the same two screws.
- 2 Remove the two roller springs (one at each end) securing the roller pair to the side plate, as shown.
- 3 Carefully slide the two rollers away from the rack assembly.

Roller pair D

- 1 On guide L, remove the two upper screws and slacken the two lower screws.
- 2 Rotate the guide anti-clockwise to clear the rollers.
- 3 Release the two screws and washers and remove the roller retaining plate from each side plate. At the same time, remove the outer guide J1; this guide is held in position by the same two screws.
- 4 Remove the two roller springs (one at each end) securing the roller pair to the side plate, as shown.
- 5 Carefully slide the two rollers away from the rack assembly.

Roller pair F

- 1 On guide M, remove the two lower screws and slacken the two upper screws.
- 2 Rotate the guide anti-clockwise to clear the rollers.
- 3 Remove the two roller springs (one at each end) securing the roller pair to the side plate, as shown.
- 4 Carefully slide the two rollers away from the rack assembly.

Installation

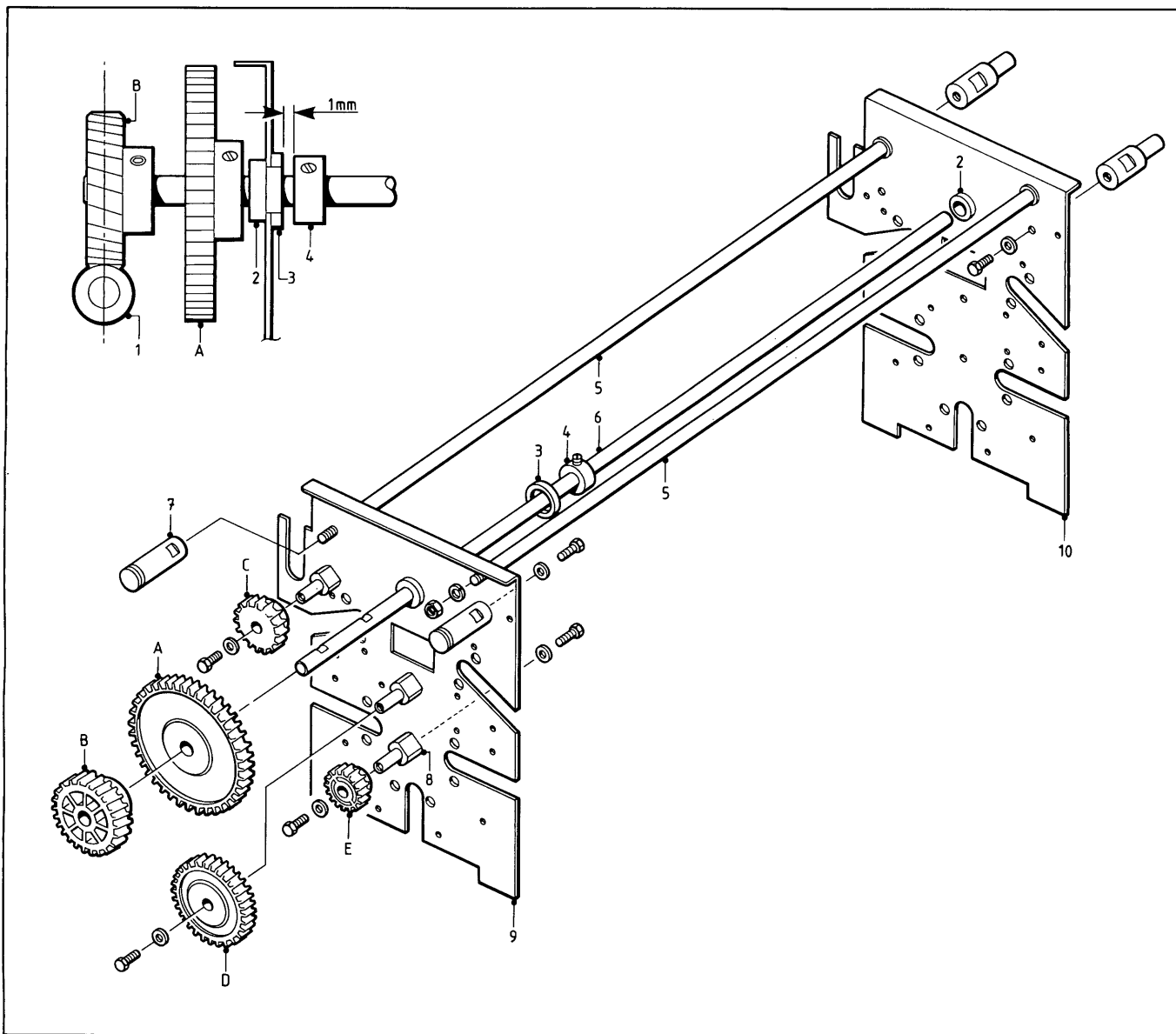
Refer to figures 2.7 and 1.5 and install all rollers in the correct configuration following the Removal sequences in reverse order.

Roller adjustment

The following sequence applies to roller pairs B, C, D and E only, and must be carried out after roller replacement, to ensure correct paper transport through the rollers when the processor is at normal operating temperature.

Figure 2.8

- 1 Worm gear, layshaft
- 2 Bearing
- 3 Washer, drive shaft
- 4 Shoulder ring
- 5 Tie rod
- 6 Drive shaft
- 7 Rack support pin (typical)
- 8 Shaft, idler gear
- 9 Side plate, left hand
- 10 Side plate, right hand



Fixer and wash racks - drive assembly
Figure 2.8

- 1 Position a thickness of two or three sheets of photographic paper (0.5-0.75mm) between the pairs of rollers, as shown in the detail on figure 2.7.
- 2 Slacken the two screws on one retaining plate and, with the two inner rollers hard against the stop in the side plate, adjust the retaining plate until it stops against the bearings of the two outer rollers. Fully tighten the screws.
- 3 Repeat the above on the other retaining plate.

2.21 Fixer rack - roller gears and bearings

See figure 2.7.

Note

The following sequence applies to all rollers. Figure 2.7 shows a typical roller assembly. All roller gears are secured by a single grub screw.

Removal

- 1 Remove the roller(s) (see 2.20 above).
- 2 Release the grub screw and pull the gear away from the roller shaft.
- 3 Slide the two bearings off the roller shaft.

Installation

- 1 Slide the two bearings onto the roller shaft, as shown.
- 2 Push the gear onto the roller shaft, as shown. Do not tighten the grub screw.
- 3 Refit the roller(s) (see 2.20 above).
- 4 Check the vertical alignment of the gear. In all cases ensure the replacement gear(s) meshes correctly with all adjacent gears. To allow for adequate end float, a minimum clearance of 1mm must be maintained between the gear and bearing. Secure all replacement gears with the grub screw.

2.22 Fixer rack - paper guides

See figures 2.7 and 2.8.

Note

In all the following sequences, the appropriate roller(s) must first be removed (see 2.20 above).

Removal

Guide G

Release the four screws, washers and nuts (two on each side) securing guide G to the side plates. Carefully remove the guide from the rack.

Guide H

Guide H is supported by four screws and is not secured. Slacken the four screws and carefully remove the guide.

Guides J1 and K2

See 2.20, roller pairs B, C, D and E above.

Guides J2 and K1

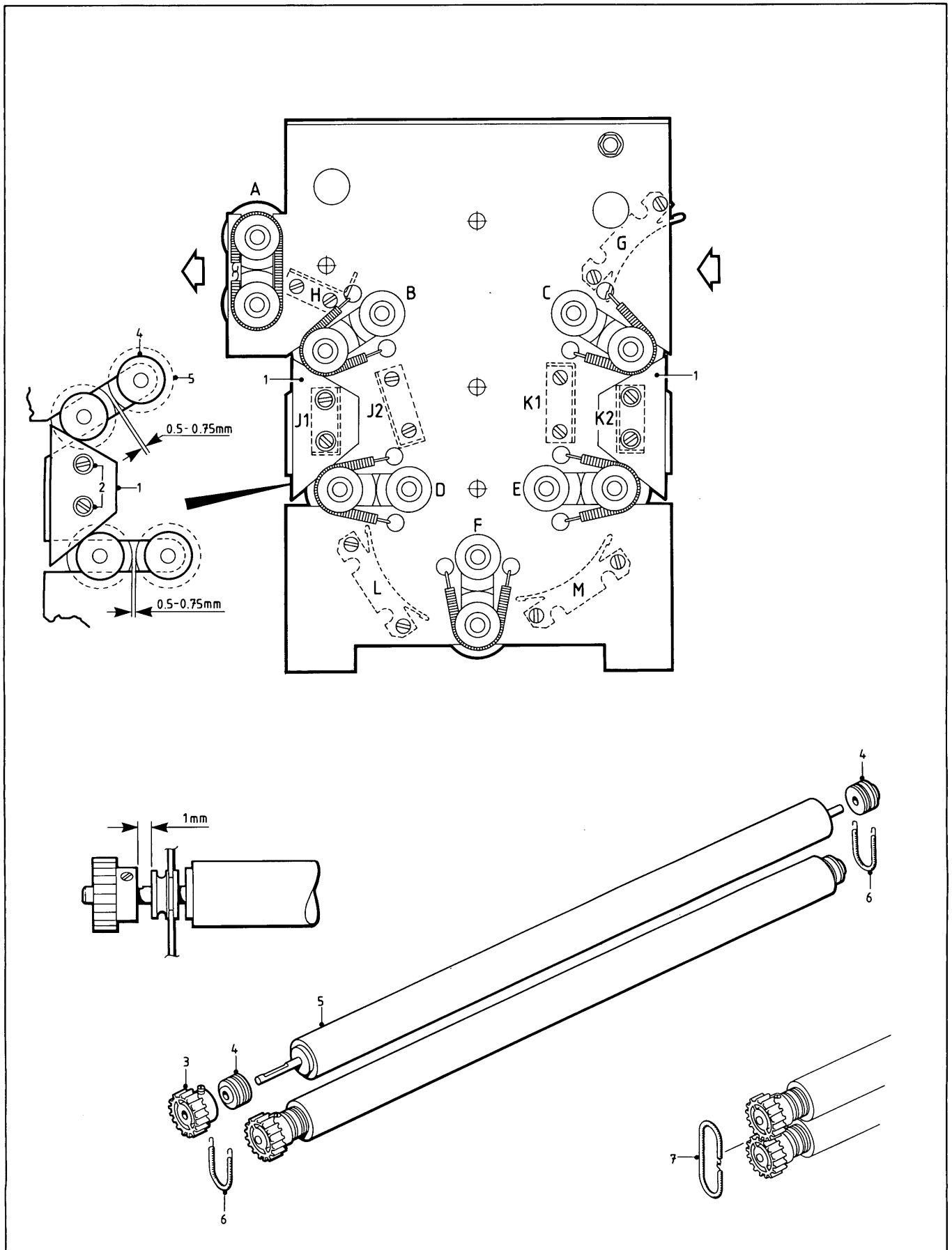
Release the four screws, washers and nuts (two on each side) securing each guide to the side plates. Carefully remove the guide.

Guides L and M

Release the four screws, nuts and washers (two on each side) securing each guide to the side plates. Carefully remove the guide.

Figure 2.9

- 1 Roller retaining plate
- 2 Securing screw - roller retaining plate
- 3 Roller gear
- 4 Roller bearing
- 5 Roller (typical)
- 6 Roller spring
- 7 Roller spring (roller pair A)



Wash rack - rollers and guides
Figure 2.9

Installation

CAUTION

To avoid print jams and scratches on prints, ensure all replacement guides are not bowed. Remove any edge burrs from replacement guides.

Thoroughly clean all replacement guides. Refer to figure 2.7 and replace all guides in their correct orientation following the Removal sequences in reverse order.

Note

There are no adjustments to the guides when they are in position.

2.23 Fixer rack - drive gears

See figure 2.8.

Removal

Gears A and B

Release the grub screw and pull the gear off the shaft.

Gears C,D and E (idler gears)

Release the hexagonal head screw and washer and pull the gear off the shaft.

Installation

- 1 In all cases, push the gear onto the shaft as shown and secure it either with the grub screw or with the hexagonal head screw and washer as appropriate.
- 2 Check the vertical alignment of the gear. In all cases, the replacement gear(s) must mesh correctly with all adjacent gears. As a general rule, use the idler gears as a datum, to align all other gears.
- 3 For gear B, refit the fixer rack and ensure the centre line of gear B is aligned with the centre line of the layshaft gear.

2.24 Fixer rack - drive shaft

See figure 2.8.

The removal and installation procedure for the fixer rack drive shaft is the same as described in 2.17 above.

2.25 Fixer rack - tie rods and side plates

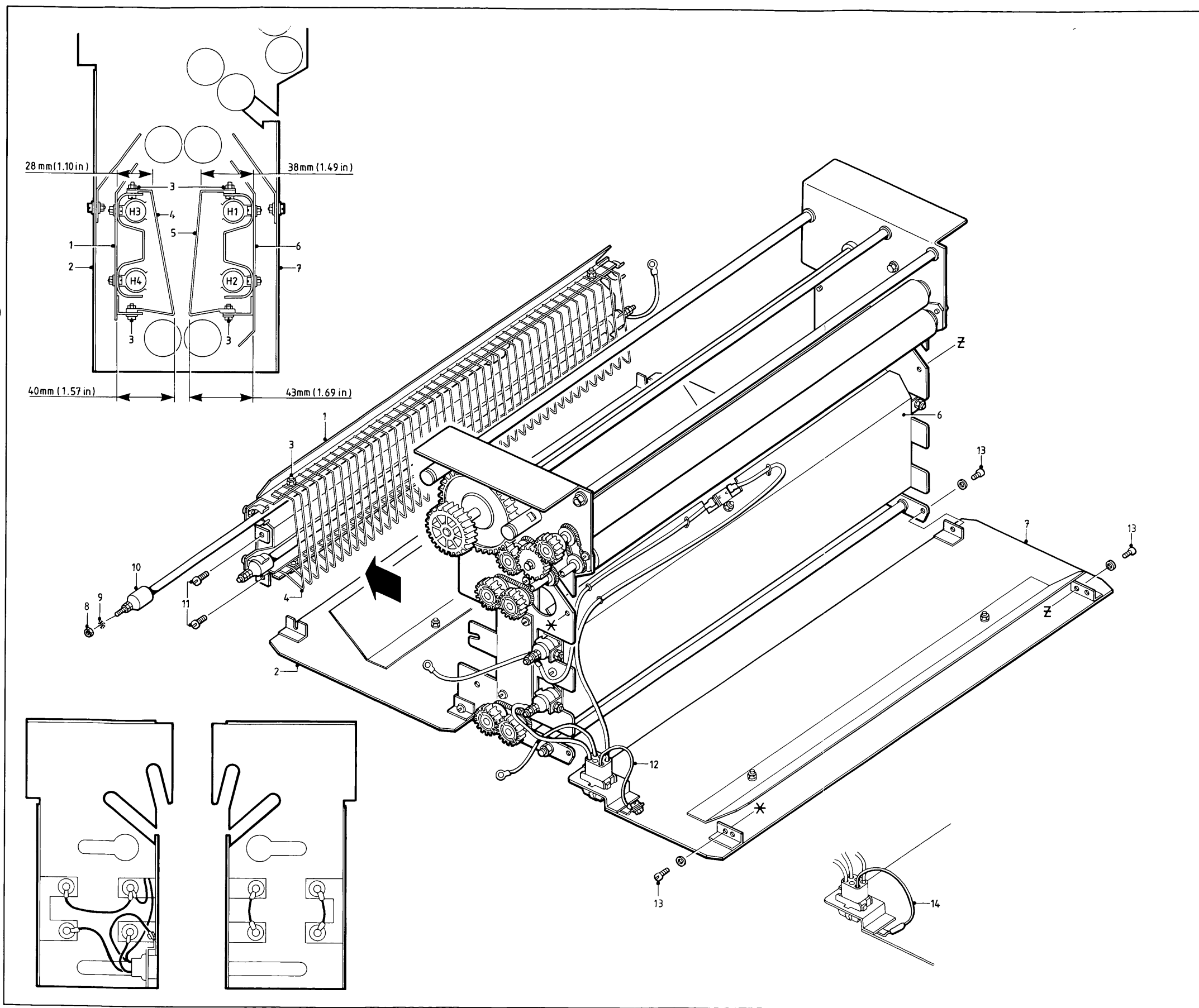
See figure 2.8.

Dismantling

- 1 Carry out the removal sequences detailed in 2.20 - 2.24 above.
- 2 On the forward tie rod, release the nut and outer spring washer at each end of the rod.
- 3 On the rear tie rod, release the rack support pin at each end of the rod.

Figure 2.10

- 1 Reflector assembly, rear
- 2 Rear panel
- 3 Securing screw - wire guide
- 4 Wire guide, rear
- 5 Wire guide, front
- 6 Reflector assembly, front
- 7 Front panel
- 8 Nut - electrical connection to heater
- 9 Shakeproof washer
- 10 Heater, 750W (H3, H4)
- 11 Securing screw - reflector assembly
- 12 Earth connection (processors from serial number 22255)
- 13 Securing screw - front and rear panels
- 14 Earth connection (processors up to serial number 22254)



Dryer rack - heaters and wire guides
Figure 2.10

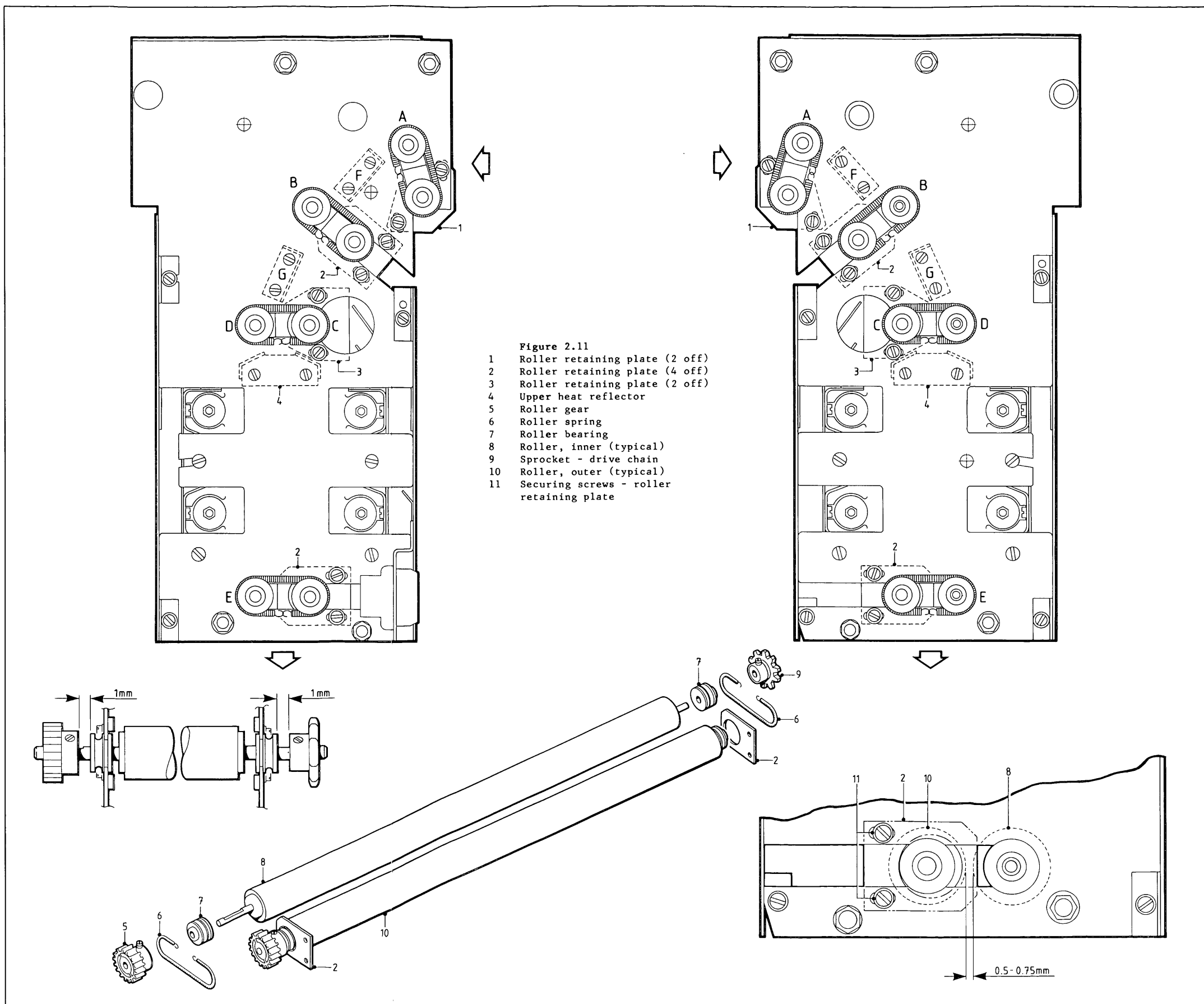


Figure 2.11
 1 Roller retaining plate (2 off)
 2 Roller retaining plate (4 off)
 3 Roller retaining plate (2 off)
 4 Upper heat reflector
 5 Roller gear
 6 Roller spring
 7 Roller bearing
 8 Roller, inner (typical)
 9 Sprocket - drive chain
 10 Roller, outer (typical)
 11 Securing screws - roller retaining plate

Dryer rack - rollers and guides
 Figure 2.11

- 4 Separate the tie rods and side plates taking care not to lose the inner plain washers on each tie rod.
- 5 Remove all remaining gear shafts and support pins from the side plates by releasing the hexagonal head screws and washers.
- 6 Carefully press out all bearings remaining in the side plates.

Re-assembly

To re-assemble the fixer rack, carry out the **Dismantling** sequence above, in reverse order. Replace bearings that are damaged or showing signs of wear. Ensure all rack support pins are refitted square against the side plates.

2.26 Wash rack

See figures 1.6, 2.8 and 2.9 and follow the sequences detailed in 2.20-2.25 above.

► **Note (roller pair A)**

On the wash rack these are sprung together and both rollers are geared, the upper roller with an idler gear (secured by a hexagonal head screw and washer). ◀

2.27 Dryer rack - heaters

See figure 2.10.

Except where indicated, the following sequence is the same for both 400W heaters H1 and H2 (front pair) and both 750W heaters H3 and H4 (rear pair).

Removal

- 1 To prevent straining the connections at the heaters and at the dryer plug, release the nut and shakeproof washer on the left hand side (plug side), and disconnect the electrical connections from the appropriate pair of heaters.
- 2 400W heaters only; remove the front panel by releasing the three screws and washers, and disengaging the panel from the locating pin below the electrical plug. Take care not to strain any of the electrical connections.
- 3 750W heaters only; slacken the four screws and allow the rear panel to hinge down.
- 4 Release the four screws (two each side) securing the reflector assembly. Carefully remove the assembly from the rack.
- 5 Release the nut and shakeproof washer and disconnect the electrical connections from the right hand side of the heater pair.
- 6 It is not necessary to remove the wire guide from the reflector assembly. Carefully push the heater out of the two clips and withdraw the heater.

Installation

CAUTION

To prevent 'hot spots' from developing on the silica sheath of the heater, handle the heater at the ends or, alternatively, wear gloves.

- 1 Handling the replacement heater at one end, carefully feed the heater into position over the two clips. Carefully press the heater ends into the clips.
- 2 Carefully refit the reflector assembly and secure it with the four screws.
- 3 Refit the front or rear dryer panel.
- 4 Re-connect the electrical cables to the heater ends (see the details on figure 2.10) and secure the connections with the nuts and shakeproof washers. Ensure the cables are clear of all gears.

2.28 Dryer rack - paper wire guides

See figure 2.10.

The following sequence is the same for both guides.

Removal

- 1 Remove the reflector assembly and two heaters (see 2.27 above).
- 2 Release the four screws, nuts and washers securing the wire guides to the reflector assembly and pull the guide away.

Installation

- 1 Locate the replacement guide and secure it with the four screws, nuts and washers, as shown, to finger tight.
- 2 Adjust the position of the guide following the dimensions shown on figure 2.10.
- 3 Fully tighten the guide securing screws and re-check the dimensions.
- 4 Refit the heaters and the reflector assembly (see 2.27 above).
- 5 Process a few sheets of fogged paper and check for scratches on the emulsion surface.

2.29 Dryer rack - drive chain

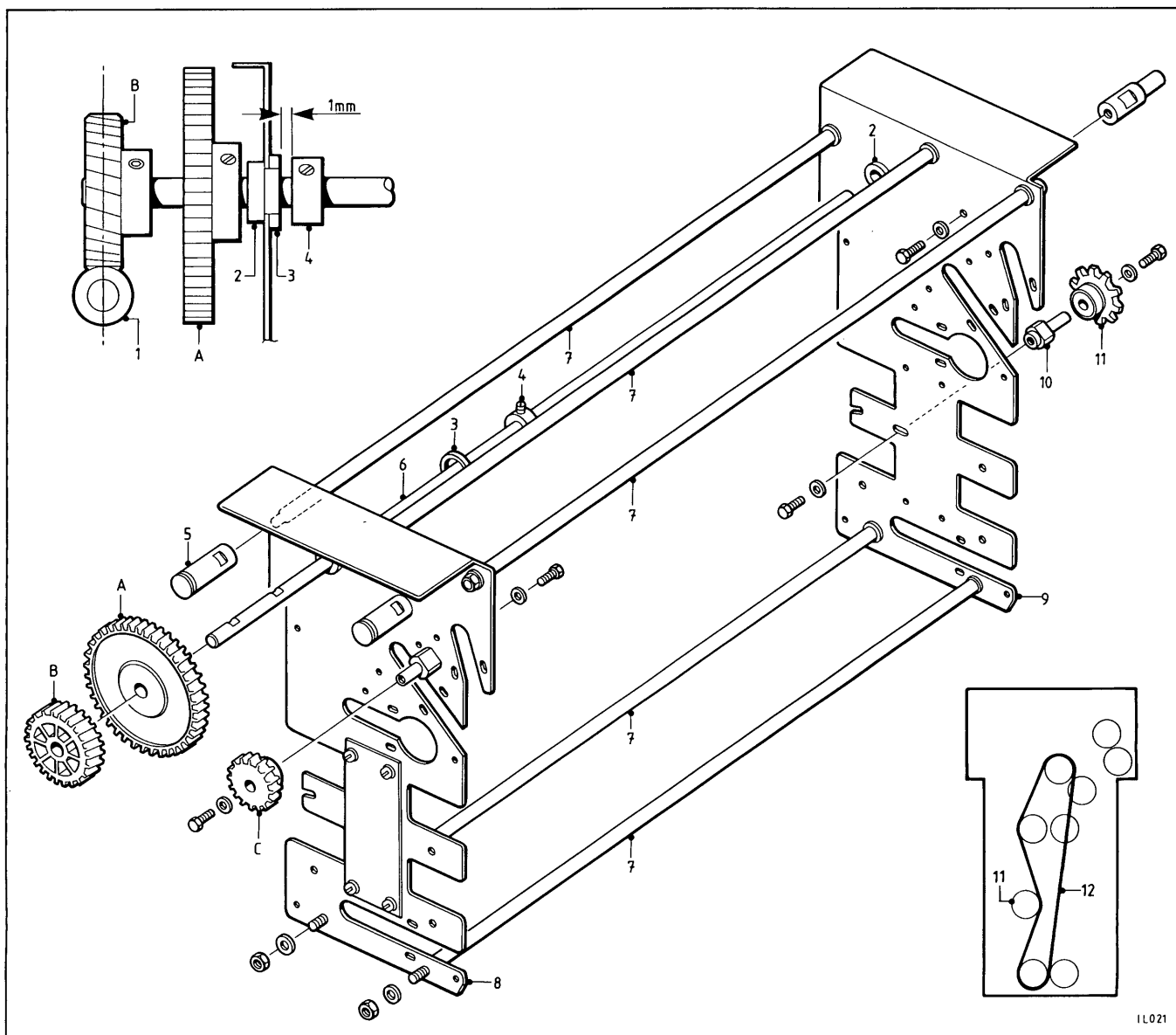
See figure 2.12.

Removal

- 1 Remove the rear reflector assembly (see 2.27 above).
- 2 On the inside of the right hand side plate remove the hexagonal head screw and washer securing the tension adjuster and disengage the tension adjuster from the chain.
- 3 Disengage the chain from the three remaining sprockets.

Figure 2.12

- 1 Worm gear, layshaft
- 2 Bearing
- 3 Washer, drive shaft
- 4 Shoulder ring
- 5 Rack support pin (typical)
- 6 Drive shaft
- 7 Tie rod
- 8 Side plate, left hand
- 9 Side plate, right hand
- 10 Shaft, chain sprocket
- ▶ 11 Tension adjuster, drive chain
- 12 Drive chain



Dryer rack - drive assembly

► Figure 2.12 ◀

Installation

- 1 Engage the chain on the three roller sprockets, as shown in the detail on figure 2.12.
- 2 Engage the tension adjuster, as shown, and secure the adjuster with the hexagonal head screw and washer to finger tight.
- 3 Remove excessive slack in the chain by moving the tension adjuster inwards. Do not over tension the chain. Tighten the hexagonal head screw. Ensure that the effort required to turn the rollers is no greater than the standard torque (see section 8).
- 4 Refit the rear reflector assembly (see 2.27 above).
- 5 With the processor switched on, check for smooth running of the rollers.

2.30 Dryer rack - rollers

See figure 2.11.

Removal

Roller pair A

- 1 On each side plate, release the two screws and washers securing the retaining plate, at the same time, support the rollers.
- 2 Slide the rollers away.
- 3 Remove the two roller springs (one at each end).
- 4 On the lower roller, slide the bearing and roller retaining plate off each end of the shaft.
- 5 On the upper roller, release the grub screw and pull the gear off the left hand end of the shaft. Slide the bearing off each end of the shaft.

Roller pair B

- 1 Disengage the drive chain from the sprocket on the right hand end of the upper roller (see 2.29 above).
- 2 Remove the front panel by releasing the three screws and washers, and disengaging the panel from the locating pin below the electrical plug. Take care not to strain any of the electrical connections.
- 3 On each side plate, release the two screws and washers securing the retaining plate, at the same time, support the rollers.
- 4 Slide the two rollers away.
- 5 Remove the two roller springs (one at each end).
- 6 On the lower roller, slide the bearing and roller retaining plate off each end of the shaft.
- 7 On the upper roller, release the grub screws and pull the gear off the left hand end and the sprocket off the right hand end of the shaft. Slide the bearing off each end of the shaft.

Roller C

- 1 Remove the front reflector assembly (see 2.27, Removal sequence, operations 2-4 above).
- 2 Release the grub screw and pull the gear off the left hand end of the roller shaft.
- 3 Remove the two roller springs (one at each end).
- 4 On each side plate, release the two screws and washers securing the retaining plate.
- 5 Move the roller forwards opposite the access holes in the side plates. Slide the two bearings off the shaft.
- 6 Remove the left hand retaining plate by angling it through the key-hole shaped access hole in the side plate.
- 7 Move the roller to the left until the right hand end clears the right hand side plate, then remove the roller to the right. Slide the right hand retaining plate off the shaft.

Note

Do not feed the roller through the access hole. The metal edge of the hole may damage the roller surface.

Roller D

- 1 Remove roller C (see above).
- 2 Remove guide G (see 2.32 below).
- 3 Move the roller forwards opposite the access holes in the side plates.
- 4 Release the grub screw and pull the gear or sprocket and bearing from the ends of the roller.
- 5 Feed the roller out in the same way as roller C.

Roller pair E

- 1 Remove the front panel by releasing the three screws and washers, and disengaging the panel from the locating pin below the electrical plug. Take care not to strain any of the electrical connections.
- 2 Remove the front reflector assembly (see 2.27, ► Removal sequence, operations 2-4 above). ◀
- 3 Disengage the drive chain from the sprocket on the right hand end of the rear roller (see 2.29 above).
- 4 On each side plate, release the two screws and washers securing the retaining plate.
- 5 Slide the rollers forwards away from the rack.
- 6 Remove the two roller springs (one at each end).
- 7 On the front roller, release the grub screw and pull the gear off the left hand end of the roller shaft. Slide the bearing and retaining plate off each end of the shaft.
- 8 On the rear roller, release the grub screws and pull the gear off the left hand end and the sprocket off the right hand end of the shaft. Slide the two bearings off the shaft.

Installation

Orientation of the rollers is shown in figure 1.7.

Note

When the rollers are in position, ensure the roller gear and/or chain sprocket meshes correctly with all adjacent gears and is aligned vertically with all other gears or sprockets. To allow for adequate end float, a minimum clearance of 1mm must be maintained between the gear/sprocket and bearing.

Roller pair A

- 1 On the lower roller, slide the bearings and retaining plates onto the shaft.
- 2 On the upper roller, slide the bearings onto the shaft. Refit the gear to the longer length of protruding shaft, as shown, and secure the gear with the grub screw.
- 3 Orientate the two rollers with the longer length of protruding shaft on the left hand side, and refit the roller springs.
- 4 Slide the rollers into the rack with the bearings engaged in the side plate cut-outs and the retaining plates located on the inside of the side plates, as shown.

- 5 Secure the retaining plates with the two screws and washers to finger tight.
- 6 Adjust the rollers (see 2.31 below).

Roller pair B

- 1 On the lower roller, slide the bearings and retaining plates onto the shaft.
- 2 On the upper roller, slide the bearings onto the shaft. Refit the gear and sprocket and secure them with the grub screws.

Note

Refit the gear to the longer length of protruding shaft, as shown.

- 3 Orientate the two rollers and refit the roller springs.
- 4 Slide the rollers into the rack with the bearings engaged in the side plate cut-outs and the retaining plates located on the inside of the side plates, as shown.
- 5 Secure the retaining plates with the two screws and washers to finger tight.
- 6 Engage the drive chain (see 2.29 above).
- 7 Adjust the rollers (see 2.31 below).
- 8 Refit the dryer rack front panel.

Roller C

- 1 Refit roller D (see below).
- 2 Refit the right hand retaining plate to the shorter length of protruding shaft. With the longer length of protruding shaft on the left hand side, refit the roller as described in the Removal sequence, operation 7, in reverse order.
- 3 Slide the bearings onto the shaft.
- 4 Refit the left hand retaining plate onto the shaft and angle the plate through the key-hole shaped access hole in the left hand side plate. Position the retaining plates over the bearings on the inside of the side plates.
- 5 Refit the gear to the left hand end of the roller shaft. Secure the gear with the grub screw.
- 6 Engage the bearings in the side plate cut-outs and slide the roller up to roller D. Secure the retaining plates with the two screws and washers to finger tight.
- 7 Refit the roller springs.
- 8 Adjust the rollers (see 2.31 below).
- 9 Refit the reflector assembly and the front panel (see 2.27, Installation sequence, operations 2 and 3 above).

Roller D

Refit roller D before roller C.

- 1 Refit the roller in the same way as roller C.
- 2 Slide the two bearings onto the shaft.
- 3 Refit the sprocket to the right hand side and the gear to the left hand side of the shaft. Secure them with the grub screws.

- 4 Engage the bearings in the side plate key-hole cut-outs and slide the roller to the rear of the cut-outs.
- 5 Refit guide G (see 2.32 below).
- 6 Refit roller C (see above).

Roller pair E

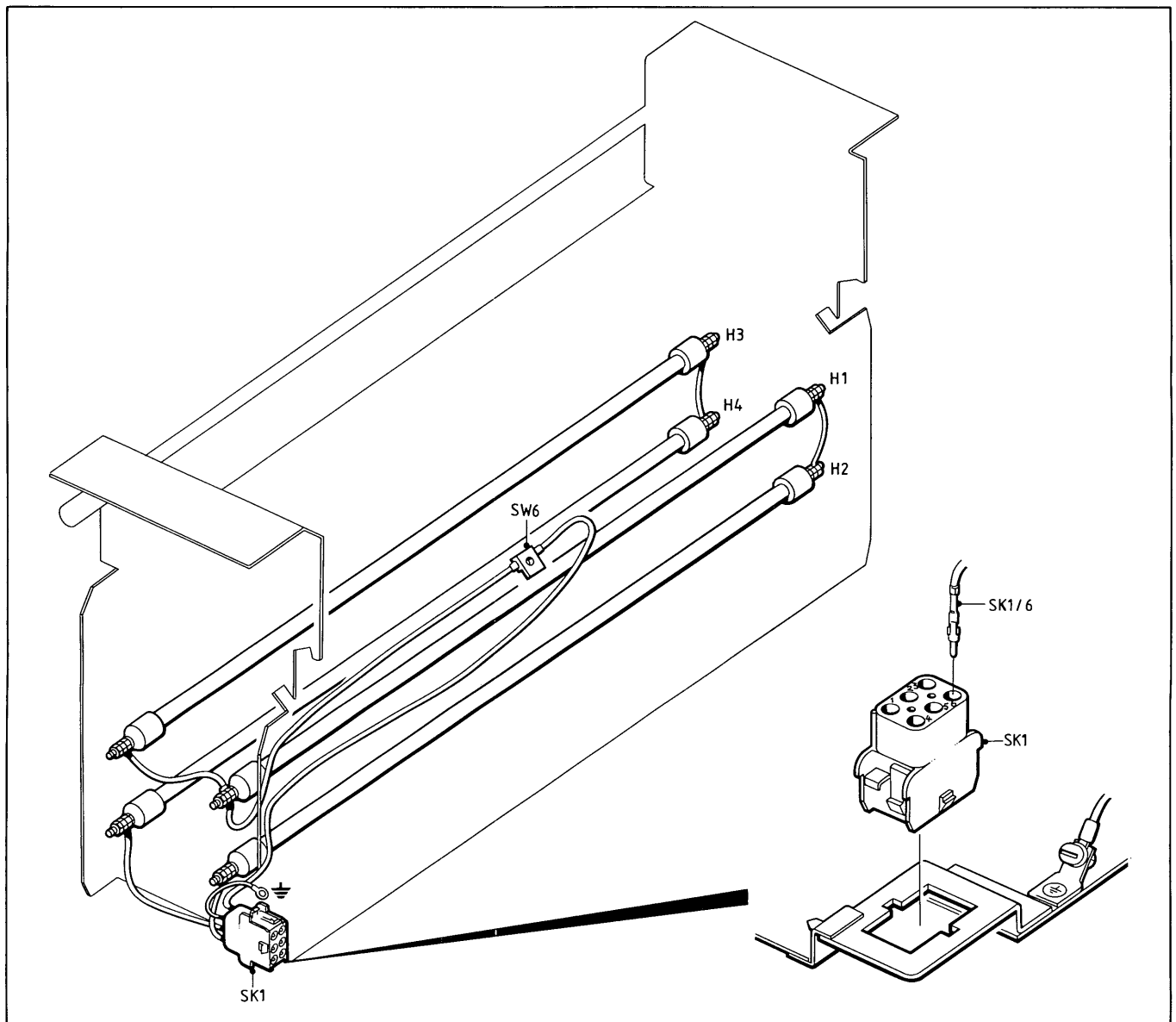
- 1 On the front roller, refit the bearings. Refit the gear to the longer length of protruding shaft and secure the gear with the grub screw.
- 2 On the rear roller, refit the bearings and retaining plates. Refit the gear to the left hand side and the sprocket to the right hand side of the shaft. Secure them with the grub screws.
- 3 Orientate the rollers and refit the roller springs.
- 4 Slide the rollers into the rack with the bearings engaged in the side plate cut-outs and the retaining plates located on the inside of the side plates, as shown.
- 5 Secure the retaining plates with the two screws and washers to finger tight.
- 6 Adjust the rollers (see 2.31 below).
- 7 Refit the reflector assembly and the front panel (see 2.27, Installation sequence, operations 2 and 3 above).

2.31 Dryer rack - roller adjustment

See figure 2.11.

The following adjustment is the same for all roller pairs and restricts the movement of the outer roller. The adjustment must be made after roller replacement, to ensure correct paper transport through the rollers when the processor is at normal operating temperature.

- 1 Position a thickness of two or three sheets of photographic paper (0.5 - 0.75mm) between the pair of rollers.
- 2 Slacken the two screws and, with the rollers hard against the stop in the side plate cut-outs, move the retaining plate towards the inner roller until the hole in the retaining plate stops against the bearing on the outer roller. Fully tighten the two screws.
- 3 Repeat the above on the other retaining plate.



Dryer rack - wiring diagram
Figure 2.13

2.32 Dryer rack - paper guides
See figure 2.11.

The following sequence is the same for guides F and G. Removal and installation of the wire guides is described in 2.28 above.

Removal

The guide is supported on four screws and is not secured. Slacken the four screws and carefully remove the guide. Take care not to damage any rollers.

Installation

Locate the guides in the correct orientation, as shown, and tighten the four screws.

2.33 Dryer rack - upper heat reflector

See figure 2.11.

Removal

- 1 Remove the front reflector assembly (see 2.27, Removal sequence, operations 2-4 above).
- 2 The upper heat reflector rests on four screws and is not secured. Slacken the four screws and carefully remove the reflector.

Installation

- 1 Locate the reflector in the correct orientation, as shown, and tighten the four screws.
- 2 Refit the reflector assembly and the front panel (see 2.27, Installation sequence, operations 2 and 3 above).

2.34 Dryer rack - drive gears

See figure 2.12.

Removal

Gears A and B

Release the grub screw (socket head on gear B and slotted head on gear A) and pull the gear off the shaft.

Gear C (idler gear)

Release the hexagonal head screw and washer and pull the gear off the shaft.

Installation

- 1 In all cases, push the gear onto the shaft, as shown, and secure it either with the grub screw or with the hexagonal head screw and washer.
- 2 Check the vertical alignment of the gear. In all cases, the replacement gear(s) must mesh correctly with all adjacent gears. As a general rule, use the idler gear as a datum, to align all other gears.
- 3 For gear B, refit the dryer rack and ensure the centre line of gear B is aligned with the centre line of the layshaft gear.

2.35 Dryer rack - drive shaft

See figure 2.12.

The removal and installation procedure for the dryer rack drive shaft is the same as described in 2.17 above.

2.36 Dryer rack - tie rods and side plates

See figure 2.12.

Dismantling

- 1 Carry out the removal sequences detailed in 2.27 - 2.35 above.
- 2 On the upper rear tie rod, release the rack support pin at each end of the rod.

- 3 On the four remaining tie rods, release the nut and outer washer at each end of the rod.
- 4 Separate the tie rods and side plates, taking care not to lose the inner washers on each tie rod.
- 5 Remove all remaining idler gear shafts and rack support pins from the side plates by releasing the hexagonal head screws and washers.
- 6 Carefully press out all bearings remaining in the side plates.

Re-assembly

To re-assemble the dryer rack, carry out the Dismantling sequence above, in reverse order. Replace bearings that are damaged or showing signs of wear. Ensure all rack support pins are refitted square against the side plates.

2.37 Dryer rack - electrical plug (SK1)

See figure 2.13 and the circuit diagrams in section 4A-4 or 4B-4.

Note

It is recommended to order plug inserts with a replacement plug. The earth connection shown in figure 2.13 is fitted to later models. Earlier models are fitted with a push on connector.

Removal

- 1 Release the three screws and washers and remove the front panel.
- 2 Using pliers, press the two securing lugs at the top and bottom of the plug and push the plug out of the panel.
- 3 Pull the cables out of the plug. The plug inserts, soldered to the cable ends, have tags to secure them in position in the plug. To assist cable removal, compress the tags using a fine screwdriver and pull the cable.
- 4 If plug inserts are to be replaced, cut the old insert off the cable end.

Installation

- 1 If necessary, solder new inserts to the cable ends.
- 2 Push the inserts into the plug from the rear until the insert is fully located.
- 3 Locate the plug into the front panel from the rear until the securing lugs spring apart and lock the plug in position.
- 4 Refit the front panel.
- 5 Ensure the cables are clear of all gears.

3

WET SYSTEM

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ILFORD 2240RC
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3-1 DESCRIPTION

1.1 Introduction

- ▶ The wet system (see figure 1.1) is divided into four main areas: processing tanks, circulation, replenishment and drainage. These are described in detail in the following paragraphs. For information on installing solutions and adjusting replenishment rates, refer to the separate ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180).

Safety features

In addition to the safety features listed in sections 4A-1.1 or 4B-1.1, the wash water tank contains an emergency standpipe drain to prevent water spilling into the dryer compartment should the water overflow become blocked.

1.2 Processing tanks

- ▶ See figures 1.2a and 1.2b.

The processing tanks are fabricated from sheet stainless steel to BS316S33. To minimise corrosion, the stainless steel is passivated during manufacture. The three tanks are, from the front; developer, fixer and wash water. All three tanks have a standpipe, open at the top, to allow excess solution to drain away. Each standpipe can be removed to drain the tank (see 1.5 below).

Developer tank

- ▶ The developer tank houses the developer roller rack (see section 2), colour coded red. In the bottom of the developer tank is a 2kW heater and a temperature probe, both of which are connected to the solution temperature control circuit (see section 4A-1.3 or 4B-1.4). There are also circulation inlet and outlet ports and a thermal cut-out assembly. On processors up to serial number 23179 (shallow tank) a wash water heat exchanger is located in the bottom of the tank. The heat exchanger is not fitted on processors from serial number 23180 (deep tank).

At the top of the developer tank, solution level is maintained by the standpipe. Fresh solution enters the tank via a hooked replenishment pipe (see 1.4 below).

Fixer tank

- ▶ The fixer tank houses the fixer roller rack (see section 2), colour coded blue. In the bottom of the fixer tank is a 500W heater, connected to the solution temperature control circuit (see section 4A-1.3 or 4B-1.4). There are also circulation inlet and outlet ports and a thermal cut-out assembly.

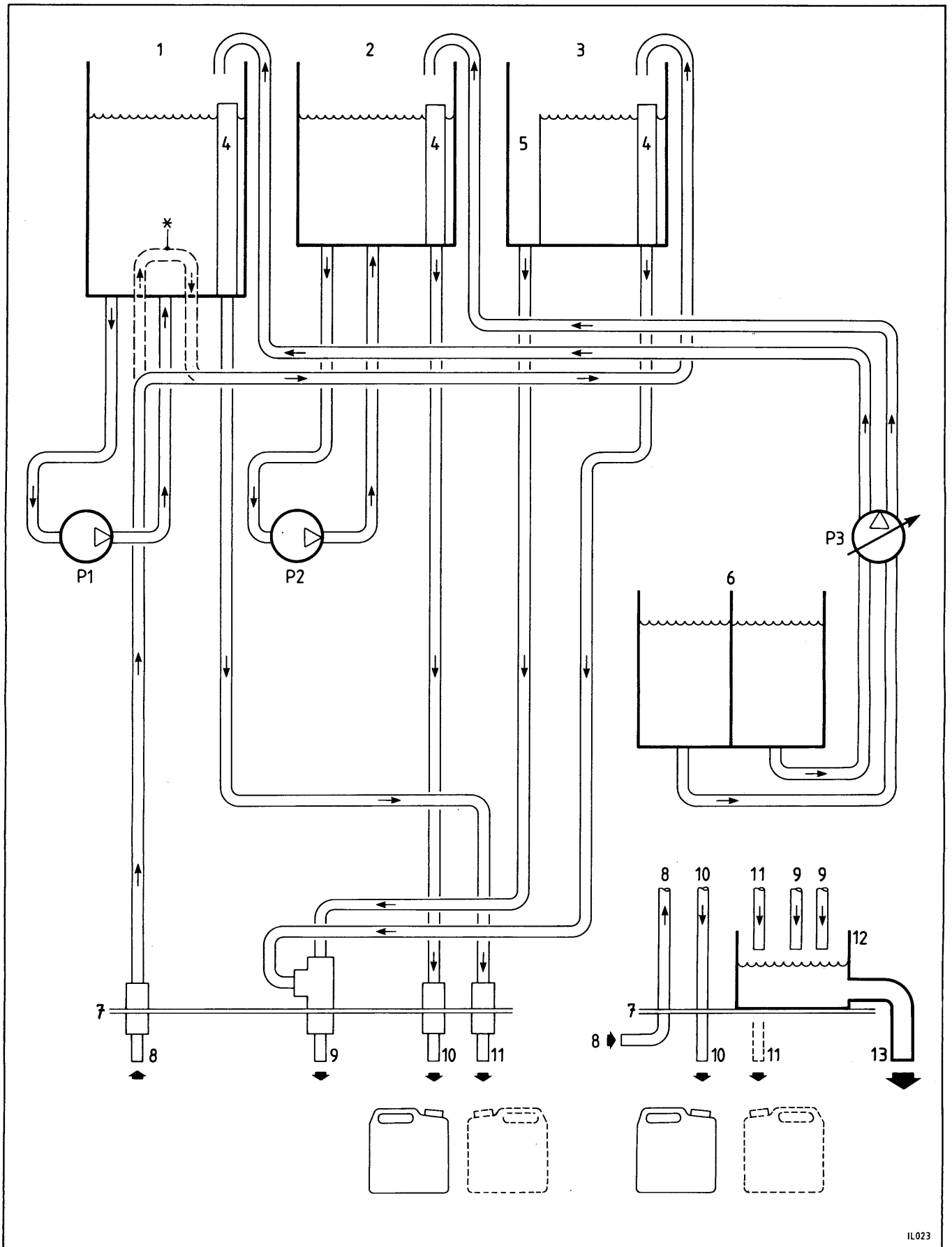
At the top of the fixer tank, solution level is maintained by the standpipe. Fresh solution enters the tank via a hooked replenishment pipe (see 1.4 below).

Figure 1.1

- ◀ 1 Developer tank
- 2 Fixer tank
- 3 Wash tank
- 4 Standpipe
- 5 Overflow, wash water
- 6 Replenishment tanks
- 7 Services support panel
- 8 Inlet, wash water
- 9 Drain, wash water
- 10 Drain, fixer
- 11 Drain, developer
- 12 Manifold
- ◀ 13 Manifold drain

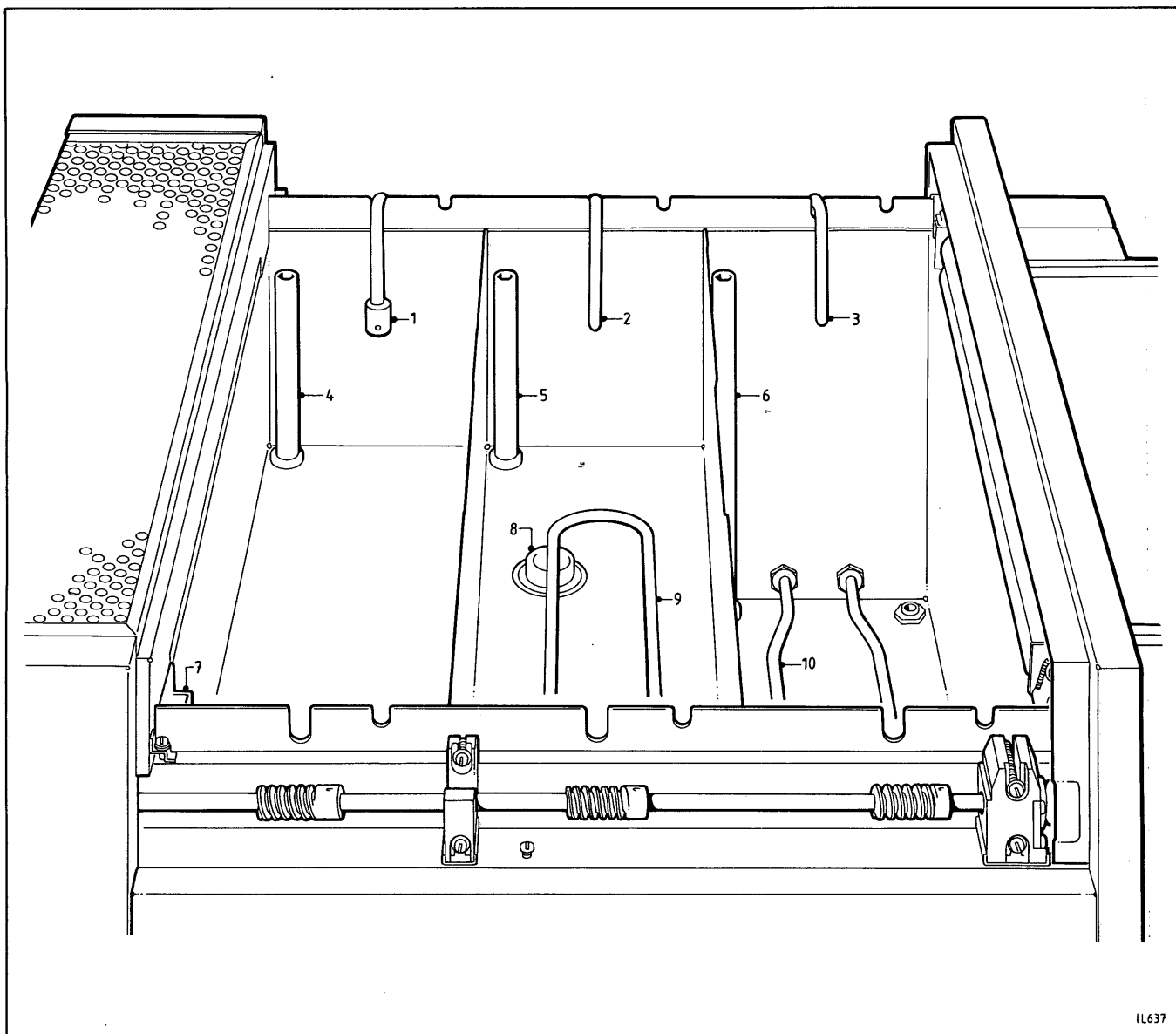
- P1 Circulation pump, developer
- P2 Circulation pump, fixer
- P3 Replenishment pump

- ▶ * Heat exchanger fitted on processors up to 23179 ◀



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Wet system
▶ Figure 1.1 ◀



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► Processing tanks from serial number 23180
Figure 1.2a◀

Wash tank

The wash tank houses the wash roller rack (see section 2), colour coded black. During processing, a continuous supply of fresh water enters the tank at the top, via the hooked pipe. To maintain the correct water level, excess water exits the tank via the overflow drain. For maximum efficiency, the processed sheets are, therefore, always washed in clean fresh water.

Note

If the overflow drain becomes blocked, an emergency standpipe, open at the top, allows excess water to drain away. This prevents water from spilling into the dryer compartment and coming into contact with electrical equipment.

Figure 1.2a

- 1 Inlet, wash water
- 2 Replenishment pipe, fixer
- 3 Replenishment pipe, developer
- 4 Standpipe, wash water
- 5 Standpipe, fixer
- 6 Standpipe, developer
- 7 Overflow, wash water
- 8 Thermal cut-out (SW3, SW4)
- 9 Heater, 500W, fixer (H6)
- 10 Heater, 2kW, developer (H5)

1.3 Circulation

See figure 1.1.

When the processor is switched on, the developer and fixer solutions are circulated continuously by two independent, magnetic drive, impeller pumps mounted on the processor centre base plate below the processing tanks. Each pump circulates solution at a fixed rate of 20 litres/minute. The pumps are connected to the processing tanks by plastic pipes colour coded; red for developer and blue for fixer.

The circulation inlet port in each of the developer and fixer tanks contains a deflector which causes the solution, circulating into the tank, to be sprayed outwards and therefore maintain an even temperature distribution.

For details of the circulation pump control circuitry, see section 4A-1.7 or 4B-1.8.

1.4 Replenishment

See figure 1.1.

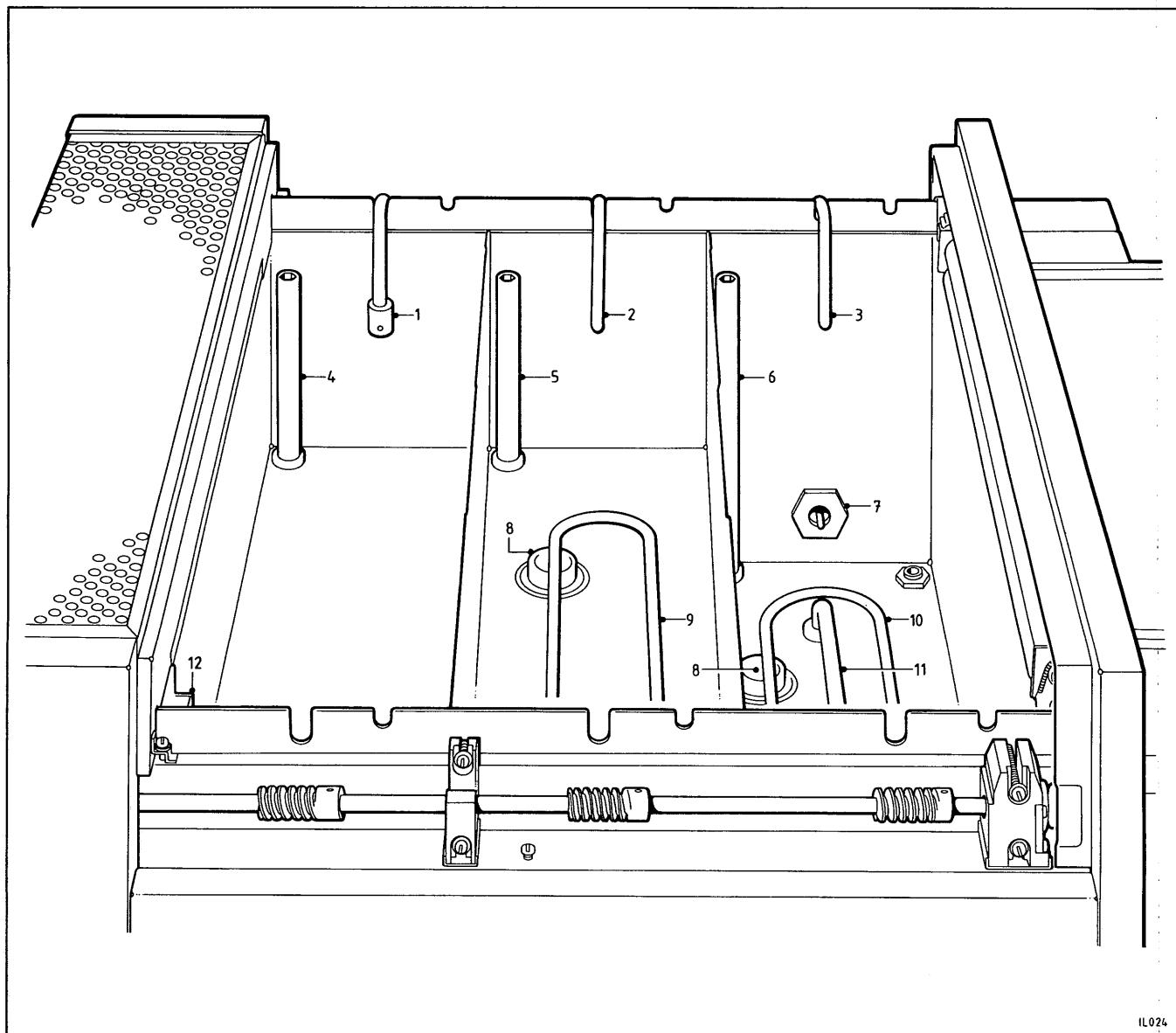
To compensate for developer and fixer solution lost by solution carry over and the effects of evaporation and exhaustion, the solution level is maintained continuously during processing by pumping independently metered quantities of fresh solution into the developer and fixer processing tanks. This is done by a replenishment pump, secured in the lower electrical compartment at the front of the processor.

The pump consists of a motor driven cam operating on two independently adjustable diaphragm pumps. Two knurled knobs project through the floor of the lower electrical compartment, and provide easy adjustment to the rate of replenishment from 0-600ml/minute $\pm 2\%$, for each solution.

Stock replenishment solution is contained in a two section replenishment tank housed within the lower compartment of the processor. The replenishment tank has two lids; black for developer and grey for fixer. The developer section of the replenishment tank also contains a floating lid. All plastic pipes connected too and from the replenishment pump are colour coded red for developer and blue for fixer.

CAUTION

To minimise oxidation of the developer solution, the floating lid must be kept in position at all times.



► Processing tanks up to serial number 23179
 Figure 1.2b ◀

Both the developer and fixer sections of the replenisher tank have level indicators that can be viewed through the cut-outs in the processor lower side panel.

For details of the replenishment pump control circuitry, see section 4A-1.8 or 4B-1.9.

1.5 Drainage
 See figure 1.1.

The two methods of drainage; standard and with manifold, are shown diagrammatically on figure 1.1.

▶ Figure 1.2b ◀

- 1 Inlet, wash water
- 2 Replenishment pipe, fixer
- 3 Replenishment pipe, developer
- 4 Standpipe, wash water
- 5 Standpipe, fixer
- 6 Standpipe, developer
- 7 Temperature probe, solution (R2)
- 8 Thermal cut-out (SW3, SW4)
- 9 Heater, 500W, fixer (H6)
- 10 Heater, 2kW, developer (H5)
- 11 Heat exchanger
- 12 Overflow, wash water

All drain pipes are routed to the services support panel at the rear of the processor in the lower compartment. Connection to the service drain is described fully in the separate ILFOSPEED 2240 Installation manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180). The manifold drain is available as a kit (part number 6087-2-001) from ILFORD Limited and installation of the manifold drain is described fully in the separate ILFOSPEED 2000 manifold kit fitting instructions leaflet supplied with the kit. The drain pipes to the services support panel are colour coded; red for developer, blue for fixer and clear plastic for wash water.

The developer and fixer tanks each have a single drain. To drain the solutions unscrew the standpipe using the standpipe key supplied with the processor. The wash water tank has two drains; overflow and emergency standpipe. The overflow drain is in use constantly during processing, and maintains a clean, fresh level of water in the tank. The emergency standby prevents water from spilling into the dryer compartment should the overflow become blocked. The standpipe can be removed, using the standpipe key supplied, to drain the tank.

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Illustrations

The following illustrations detail the removal and installation of components

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3-2 REMOVAL AND INSTALLATION

2.1 Solution heaters

▶ See figures 2.1a and 2.1b.

The following sequence is the same for the developer and fixer heaters.

Removal

To remove the solution heaters, proceed as follows:

- 1 Isolate the processor from the electrical mains supply.
- 2 Remove the processor top cover.
- 3 Remove the appropriate roller rack.
- 4 Remove the standpipe and drain the appropriate tank.
- ▶ 5 Remove the appropriate upper side panel.
- 6 Release the nut and washer and remove the heater cover from the side of the tank, to expose the electrical connections.
- 7 Release the nuts and washers and remove the electrical connections from the heater terminals and the earth terminal.
- 8 Release the two large nuts and remove the earth plate complete. Withdraw the heater from inside the tank. Take care not to lose the fibre sealing washers from the heater.

Installation

To install the solution heaters, proceed as follows:

Note

Replace the fibre washers if they are showing signs of wear or damage.

- 1 Locate the heater through the tank. Secure the earth plate to the heater with the two large nuts, as shown.
- 2 Secure the wires to the heater terminals and the earth terminal with the nuts and washers, as shown. Polarity is not important.
- 3 Secure the heater cover with the nut and washer.
- 4 Refit the standpipe.
- ▶ 5 Fill the appropriate tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180). Ensure there are no leaks.
- 6 Refit the roller rack.
- ▶ 7 Refit the upper side panel and the top cover.
- 8 Check the solution temperature. See section 4A-3.1 or 4B-3.1, test 4.

2.2 Thermal cut-out assembly

▶ See figures 2.1a and 2.1b.

The following sequence is the same for the developer and fixer thermal cut-outs.

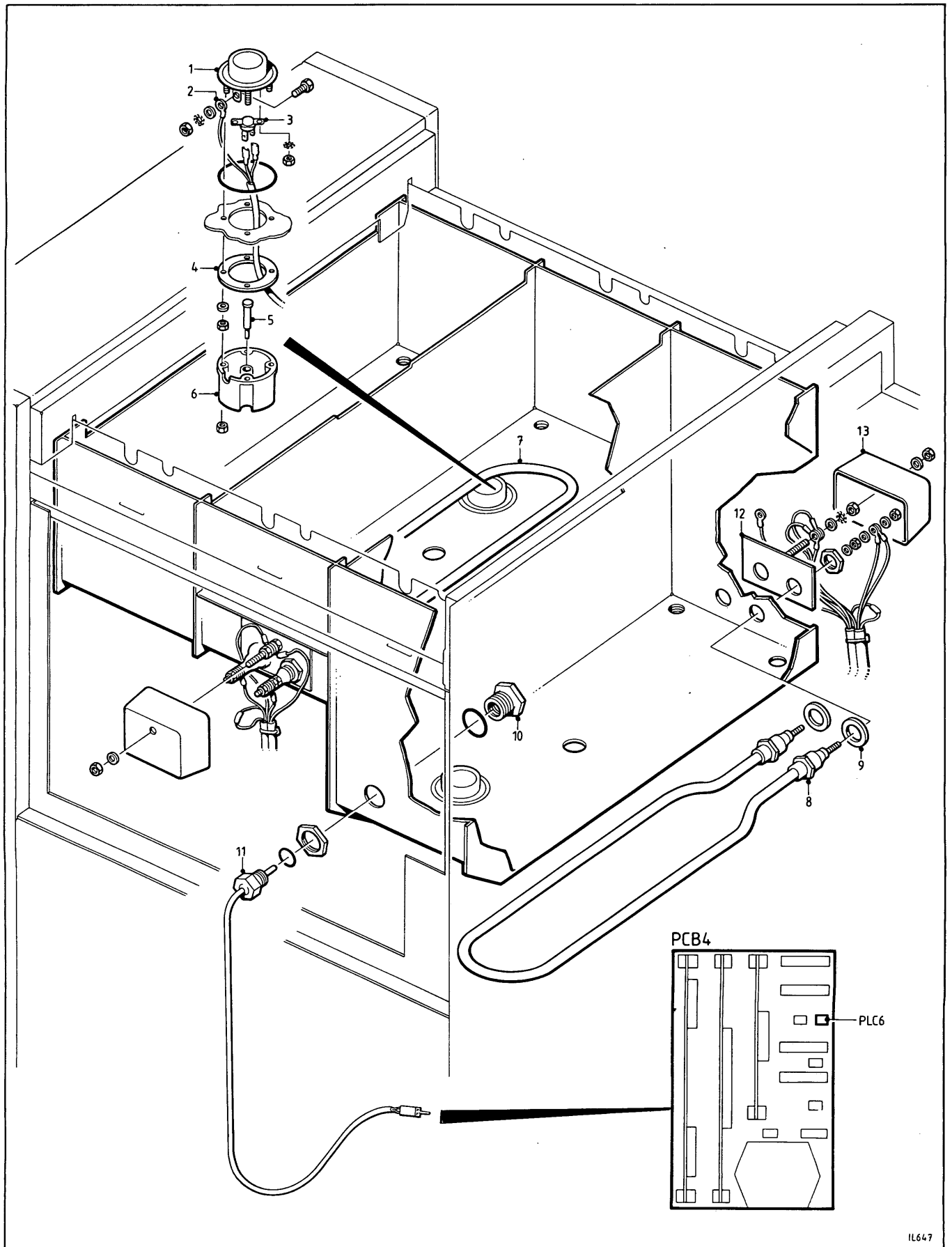
Removal

To remove the thermal cut-out assembly, proceed as follows:

- 1 Isolate the processor from the electrical mains supply.
- 2 Remove the processor top cover.
- 3 Remove the appropriate roller rack.
- 4 Remove the standpipe and drain the appropriate tank.
- ▶ 5 Remove the appropriate upper side panel.

▶ Figure 2.1a

- 1 Housing, thermal cut-out
- 2 Earth wire
- 3 Thermal cut-out
- 4 Shoulder ring
- 5 Reset button
- 6 Plastic housing
- 7 Solution heater, fixer (H6)
- 8 Solution heater, developer (H5)
- 9 Fibre sealing washer
- 10 Housing, solution temperature probe
- 11 Solution temperature probe
- 12 Earth plate
- 13 Heater terminals cover



► Processing tanks - electrical from serial number 23180
Figure 2.1a ◀

- 6 From below the tank, release the four nuts and withdraw the plastic housing, complete with the reset button.
- 7 Release the four nuts and washers and withdraw the shoulder ring. This operation releases the thermal cut-out housing in the tank.
- 8 Carefully withdraw the thermal cut-out housing from the tank and disconnect the three electrical connections from the thermal cut-out. Take care not to lose the 'O' ring.
- 9 Release the two nuts and shakeproof washers and withdraw the thermal cut-out from the housing.

Installation

To install the thermal cut-out assembly, proceed as follows:

Note

Replace the 'O' ring if it is showing signs of wear or damage.

- 1 Secure the thermal cut-out to the housing with the two nuts and shakeproof washers, as shown.
- 2 Feed the electrical cable up through the tank and connect the wires to the thermal cut-out as follows:
 - 2a Secure the earth wire to the earth connection with the screw, nut and washers, as shown.
 - 2b Connect the other two wires to the two push on terminals. Polarity is not important.
- 3 Locate the housing through the tank. Secure the shoulder ring to the housing with the four nuts and washers, as shown.
- 4 Secure the plastic housing, complete with the reset button, to the shoulder ring with the four nuts, as shown. Before tightening the nuts, ensure the electrical cable is routed through the cut-out in the upper flange of the plastic housing.
- 5 Refit the standpipe.
- ▶ 6 Fill the appropriate tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180). Ensure there are no leaks.
- 7 Refit the roller rack.
- ▶ 8 Refit the upper side panel and the top cover.
- 9 Check the solution temperature. See section 4A-3.1 or 4B-3.1, test 4.

2.3 Developer temperature probe

- ▶ See figures 2.1a and 2.1b.

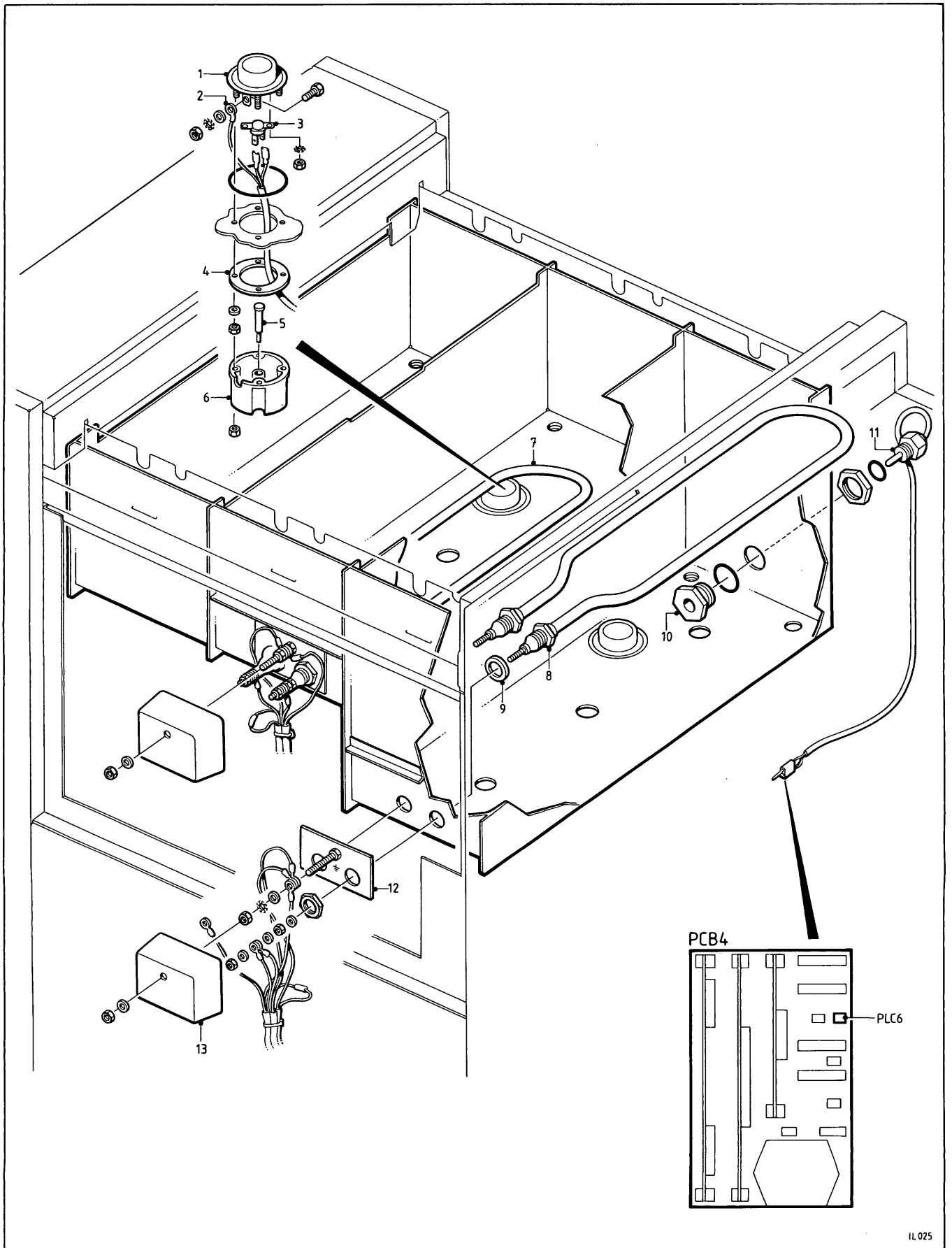
Removal

To remove the developer temperature probe, proceed as follows:

- 1 Isolate the processor from the electrical mains supply.
- 2 Remove the processor top cover.
- 3 Remove the developer roller rack.
- 4 Remove the standpipe and drain the developer tank.
- ▶ 5 Remove the appropriate upper side panel.

Figure 2.1b

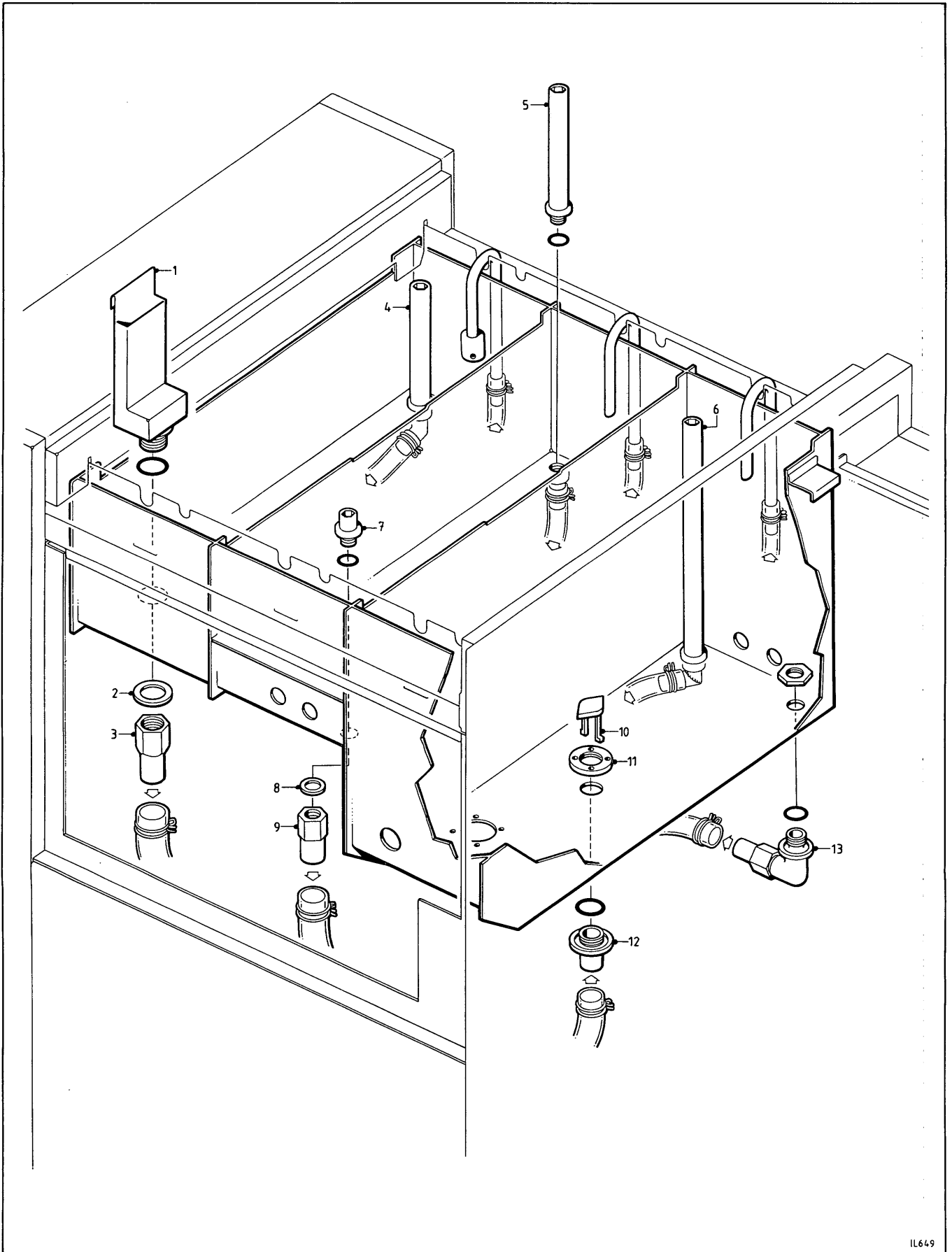
- 1 Housing, thermal cut-out
- 2 Earth wire
- 3 Thermal cut-out
- 4 Shoulder ring
- 5 Reset button
- 6 Plastic housing
- 7 Solution heater, fixer (H6)
- 8 Solution heater, developer (H5)
- 9 Fibre sealing washer
- 10 Housing, solution temperature probe
- 11 Solution temperature probe
- 12 Earth plate
- 13 Heater terminals cover



► Processing tanks - electrical up to serial number 23179
Figure 2.1b ◀

12a

Section 3-2



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► Processing tanks - plumbing from serial number 23180

- **Figure 2.2a**
- 1 Wash water overflow
 - 2 Fibre washer
 - 3 Hose connector, wash water overflow
 - 4 Standpipe, wash water
 - 5 Standpipe, fixer
 - 6 Standpipe, developer
 - 7 Outlet, fixer circulation
 - 8 Fibre washer
 - 9 Hose connector, fixer circulation outlet
 - 10 Deflector insert, circulation inlet
 - 11 Locking ring
 - 12 Hose connector, circulation inlet
 - 13 Hose connector, developer circulation outlet

- 6 Using two spanners, release the temperature probe from the probe housing and withdraw the probe. Take care not to lose the 'O' ring.
- 7 Carefully unplug PLC6 from PCB4 and withdraw the cable through the electrical support panel, removing any cable tie-wraps as necessary.

Installation

To install the developer temperature probe, proceed as follows:

Note

Replace the 'O' ring if it is showing signs of wear or damage.

- ◀ 1 Carefully feed the cable through the electrical support panel, and connect the cable to PCB4 plug PLC6. Replace any cable tie-wraps as necessary.
- 2 Secure the probe, complete with 'O' ring into the probe housing, as shown. Do not overtighten the probe.
- 3 Refit the standpipe.
- 4 Fill the developer tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180). Ensure there are no leaks. ◀
- 5 Refit the roller rack.
- 6 Refit the upper side panel and the top cover. ◀
- 7 Check the developer temperature. See section 4A-3.1 or 4B-3.1, test 4.

- 2.4 **Heat exchanger - processors up to serial number 23179**
See figures 2.2a and 2.2b.

Note

The heat exchanger is not fitted on processors from serial number 23180. ◀

Removal

To remove the heat exchanger, proceed as follows:

- 1 Isolate the processor from the electrical mains supply.
- 2 Remove the processor top cover.
- 3 Remove the developer roller rack.
- 4 Remove the standpipe and drain the developer tank.
- 5 Remove the right hand upper side panel. ◀
- 6 From below the developer tank, release the collar at each end of the heat exchanger and remove the collar complete with plastic elbows and hose connectors.
- 7 Unscrew the two reducers and remove the reducers and spacer rings.

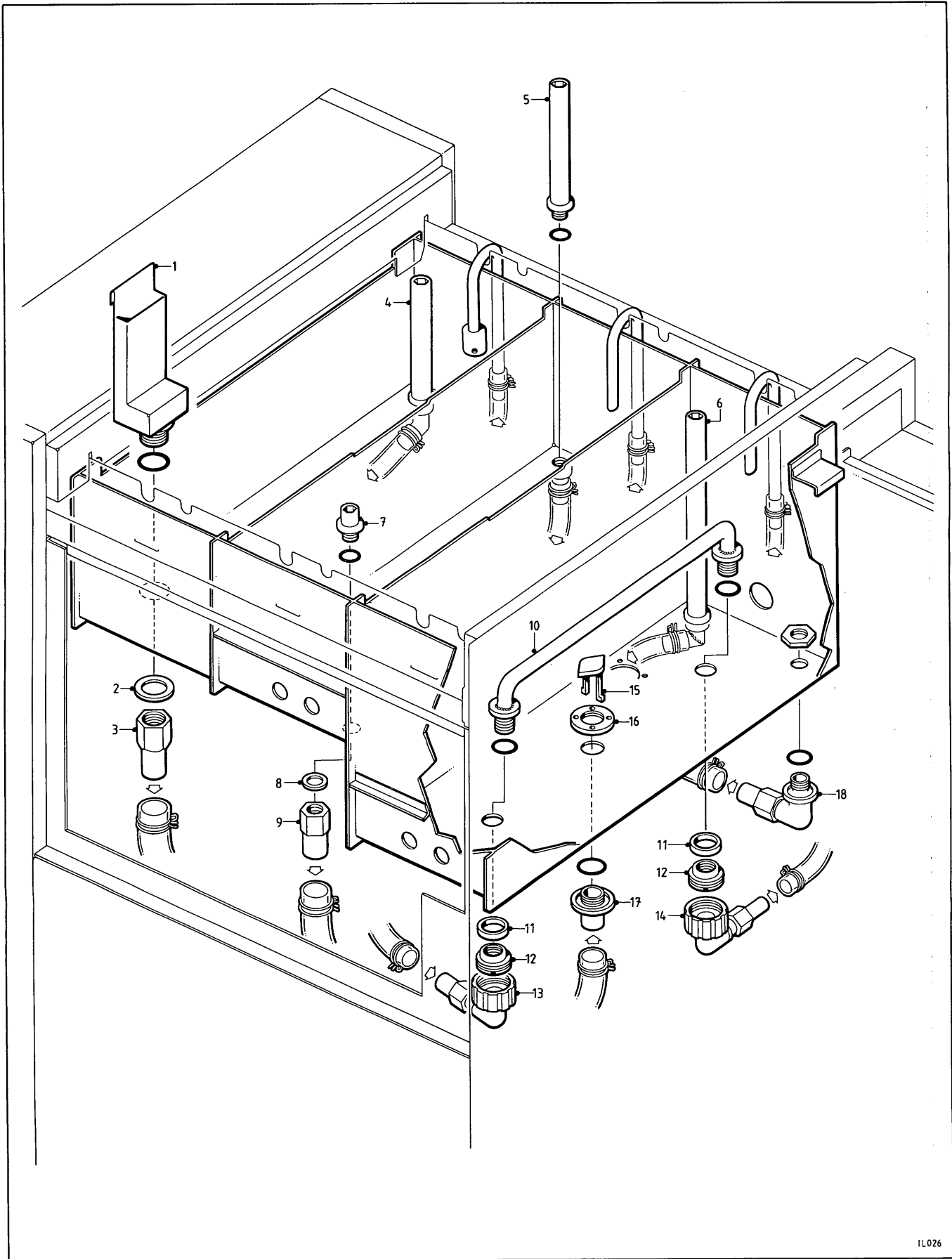
Note

The reducers have slots in their lower edge to provide a turning aid.

- 8 Withdraw the heat exchanger from the tank. Take care not to lose the 'O' rings.

Installation

To install the heat exchanger, proceed as follows:



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- ▶ **Figure 2.2b** ◀
- 1 Wash water overflow
 - 2 Fibre washer
 - 3 Hose connector, wash water overflow
 - 4 Standpipe, wash water
 - 5 Standpipe, fixer
 - 6 Standpipe, developer
 - 7 Outlet, fixer circulation
 - 8 Fibre washer
 - 9 Hose connector, fixer circulation outlet
 - 10 Heat exchanger
 - 11 Spacer ring
 - 12 Reducer
 - 13 Hose connector assembly, 17mm, inlet
 - 14 Hose connector assembly, 13mm, outlet
 - 15 Deflector insert, circulation inlet
 - 16 Locking ring
 - 17 Hose connector, circulation inlet
 - 18 Hose connector, developer circulation outlet

Note

Replace the 'O' rings if they are showing signs of wear or damage.

- 1 Locate the heat exchanger in the tank either way round, as shown.
- 2 Secure the reducer and spacer ring to each end of the heat exchanger, as shown.
- 3 Secure the hose connector assembly, with the collar, to each reducer, as shown.

Note

Secure the 17mm outside diameter (larger) hose connector to the left hand end and the 13mm outside diameter (smaller) hose connector to the right hand end.

- 4 Refit the standpipe.
- ▶5 Fill the developer tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180). Ensure there are no leaks. ◀
- 6 Refit the roller rack.
- ▶7 Refit the right hand upper side panel and the top cover. ◀
- 8 Operate the wash water supply to the processor. Ensure there are no leaks at the heat exchanger.

2.5 Wash water overflow

- ▶ See figures 2.2a and 2.2b. ◀

Removal

To remove the wash water overflow, proceed as follows:

- 1 Isolate the processor from the electrical mains supply.
- 2 Remove the processor top cover.
- 3 Remove the wash roller rack.
- 4 Remove the standpipe and drain the wash water tank.
- 5 Remove the left hand upper side panel.
- 6 From below the tank, release the hose connector and fibre washer.
- 7 Withdraw the wash water overflow by unhooking the unit from the wash tank rear wall. Take care not to lose the 'O' ring.

Installation

To install the wash water overflow, proceed as follows:

Note

Replace the 'O' ring and fibre washer if they are showing signs of wear or damage.

- 1 Locate the wash water overflow, complete with 'O' ring, in the wash tank. Ensure the rolled edge of the unit is hooked over the wash tank rear wall.
- 2 Secure the hose connector and fibre washer, as shown. While tightening the hose connector, support the overflow and ensure it is clamped squarely against the floor of the wash water tank.
- 3 Refit the standpipe.
- 4 Turn on the wash water supply to the processor and fill the wash tank. Ensure there are no leaks.
- 5 Refit the roller rack.
- 6 Refit the left hand upper side panel and the top cover.

2.6 Circulation inlet (deflector assembly)

- ▶ See figures 2.2a and 2.2b.

The following sequence is the same for the developer and fixer circulation inlets.

Removal

To remove the circulation inlet, proceed as follows:

- 1 Isolate the processor from the electrical mains supply.
- 2 Remove the processor top cover.
- 3 Remove the appropriate roller rack.
- 4 Remove the standpipe and drain the appropriate tank.
- 5 Remove the left hand upper side panel.
- 6 Release the locking ring in the tank.

Note

The locking ring has four recesses to provide a turning aid.

- 7 Withdraw the locking ring and deflector insert from the tank, and the pipe connector from below the tank. Take care not to lose the 'O' ring.

Installation

To install the circulation inlet, proceed as follows:

Note

Replace the 'O' ring if it is showing signs of wear or damage.

- 1 Locate the hose connector through the tank from below.
- 2 Secure the locking ring, complete with deflector insert, to the hose connector from inside the tank, as shown.

Note

To maximise circulation of the solutions, fit the deflector with the pointed ends towards the left and right hand sides of the tank, as shown.

- 3 Refit the standpipe.
- ▶ 4 Fill the appropriate tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180). Ensure there are no leaks.
- 5 Refit the roller rack.
- 6 Refit the left hand upper side panel and the top cover.

2.7 Processing tanks

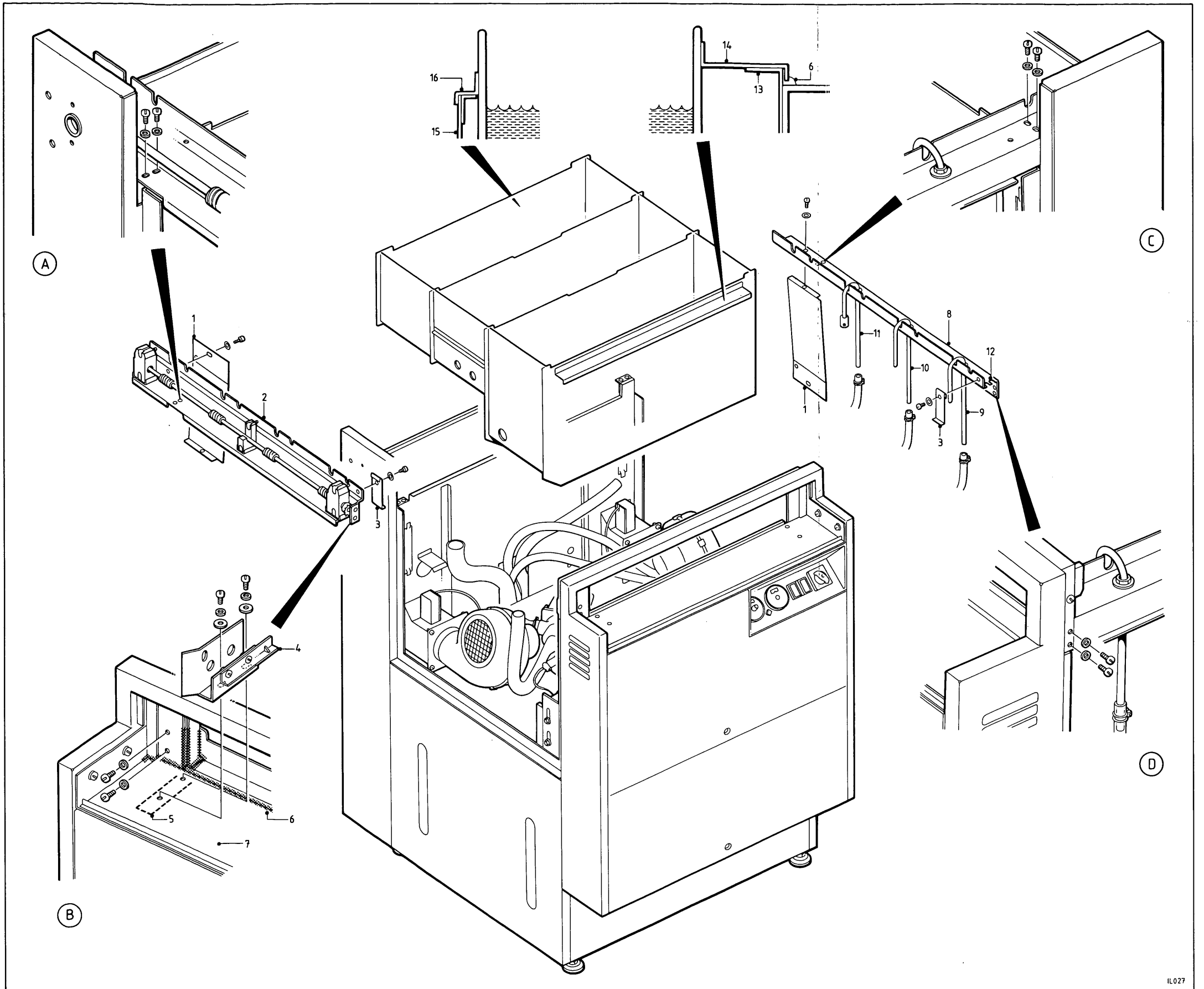
- ▶ See figures 2.2a, 2.2b and 2.3.

Removal

- 1 Turn off the water supply to the processor.
- 2 Isolate the processor from the electrical mains supply.
- 3 Remove the processor top cover.
- 4 Remove the developer, fixer, wash and dryer roller racks (see section 2-1.4).
- 5 Remove the feed tray and paper detector assembly (see section 2-2.8).
- 6 Remove the drive chain (see section 2-2.1).
- 7 Remove the three standpipes and drain the developer, fixer and wash tanks. Take care not to lose the standpipe 'O' rings.

Figure 2.3

- 1 Side reflector
- 2 Support section, left hand
- 3 Splash guard
- 4 Support guide, detector assembly
- 5 Pencil mark
- 6 Silicon seal
- 7 Control panel fixture
- 8 Support section, right hand
- 9 Inlet pipe, developer replenishment
- 10 Inlet pipe, fixer replenishment
- 11 Inlet pipe, wash water
- 12 Cable grommet slots
- 13 Processor chassis, front support
- 14 Front support, processing tank assembly
- 15 Processor chassis, rear support
- 16 Rear support, processing tank assembly



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Processing tanks
 ▶ Figure 2.3 ◀

- 8 Remove the left and right hand upper side panels.
- 9 Disconnect all flexible hoses from below the tank by slackening the hose clips and pulling the hoses away from the plastic connectors. Be prepared for some residual solution to drain from the tank and from the hoses.
- 10 Remove all fittings detailed in 2.1-2.6 above.
- 11 Remove all remaining hose connections, secured to the tank assembly, by releasing the locknuts and separating the locknuts from the elbows and/or hose connectors.
- 12 Release the screw and washer and remove the side reflector from the rear of each support section.
- 13 Release the screw and washer and remove the splash guard from the front of each support section, by pulling the guard away from the silicon seal.
- 14 Slacken the hose clips and pull the flexible hoses away from the hooked pipes on the right hand support section. Be prepared for some residual solution to drain from the hoses.
- 15 On each support section, release the four screws and washers and lift each support section away (see figure 2.3, details A-D).

Note

Pull the two cable grommets away from the front of the right hand support section.

- 16 Using a pencil or marker, mark the position of the left and right hand detector assembly support brackets on the control panel fixture. Release the two screws and washers and remove each support bracket assembly. See figure 2.3, detail B.
- 17 Remove the silicon seal from between the front edge of the tank assembly and the processor frame. A sharp knife may be required to cut through the seal.
- 18 Carefully lift the tank away from the processor frame.

Installation

WARNING

Before installing a new tank, rinse the tank thoroughly to remove all debris, particularly swarf. Ensure you have the correct tank assembly for your processor.

To install the processing tanks, proceed as follows:

- 1 Clean any residual silicon seal from the processor frame and the front splash guards.
- 2 Present the tank assembly to the processor frame and locate the front and rear rolled edges of the tank on the processor frame, as shown on figure 2.3. Ensure the tank assembly is square to the processor frame.
- 3 Locate the left and right hand detector assembly support brackets on the control panel fixture, using the pencil marks as a guide. Secure the brackets, each with the two screws and washers, as shown.

- 4 Refit the left and right hand support sections, and secure each section to the processor frame with the four screws and washers, as shown. On the right hand support section, ensure the two cable grommets are located in the cut outs in the front edge of the support section.
- 5 Refit the drive chain (see section 2-2.1).
- 6 Secure the side reflector to the rear of the left and right hand support sections, each with the screw and washer, as shown.
- 7 Secure the splash guard to the front of the left and right hand support sections, each with the screw and washer, as shown.
- 8 Renew the silicon seal between the front edge of the tank assembly and the processor frame, as shown.
- 9 Refit all fittings detailed in 2.1-2.6 above.
- 10 Secure all flexible hoses to the hose connections ensuring the colour coding is correct; red hoses (developer), blue hoses (fixer), clear hoses (wash water). Refit the hoses to the hooked replenisher and water supply pipes on the right hand support section.
- 11 Replace the standpipe 'O' rings if they are showing signs of wear or damage. Refit the standpipes.
- 12 Refit the roller racks.
- 13 Refit the left and right hand upper side panels and the top cover.
- 14 Refit the feed tray and paper detector assembly.
- 15 Fill the wash tank with clean water.
- 16 Start the processor and check for leaks.
- 17 Stop the processor.
- 18 Drain the tanks.
- ▶ 19 Fill the tanks with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180).

2.8 Circulation pump

See figure 2.4.

Note

The following sequence is the same for the developer and fixer circulation pumps.

Removal

To remove the circulation pump, proceed as follows:

- 1 Isolate the processor from the electrical mains supply.
- 2 Remove the processor top cover and drain the appropriate processing tank.
- 3 Remove the left and right hand upper side panels and, if possible, the lower left hand side panel.
- 4 Carefully move the replenishment tank assembly away from the processor. Take care not to strain the flexible hose connections.
- 5 Slacken the hose clips and pull the two flexible hoses away from the pump. Be prepared for any residual solution to drain from the hoses.

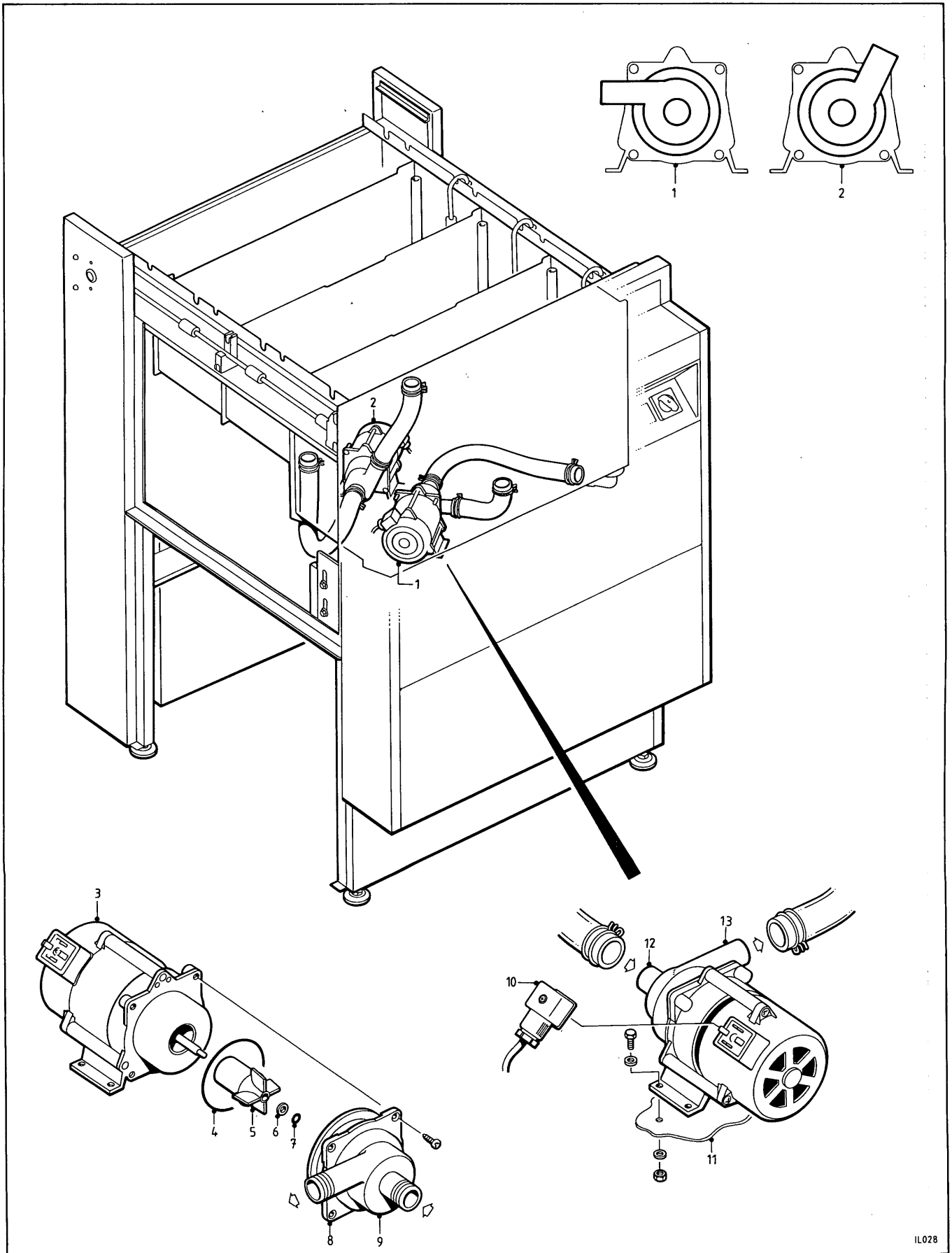


Figure 2.4

- 1 Circulation pump, developer (red hoses)
- 2 Circulation pump, fixer (blue hoses)
- 3 Pump body
- 4 Large 'O' ring
- 5 Impeller
- 6 Plain washer
- 7 Small 'O' ring
- 8 Clamp plate
- 9 Chamber housing
- 10 Electrical connector
- 11 Processor base plate
- 12 Pump, inlet
- 13 Pump, outlet

- 6 Remove the two hexagonal head screws, nuts and washers securing the circulation pump to the processor centre base plate, and remove the pump. Take care not to strain the electrical connections.
- 7 Release the centre screw and pull the electrical connector away from the pump.

Installation

To install the circulation pump, proceed as follows:

- 1 Adjust the orientation of the pump output, if necessary, as follows:
 - 1a Slacken the four screws securing the clamp plate.
 - 1b Rotate the pump chamber housing until the output is in the correct orientation for use on the developer or fixer solution (see detail on figure 2.4).
 - 1c Tighten the four screws.
- 2 Connect the two flexible hoses to the pump, as shown. Secure the hoses by tightening the hose clips.
- 3 Secure the electrical connector to the pump with the centre screw.
- 4 Secure the pump to the processor centre base plate with the two hexagonal head screws, nuts and washers, as shown.
- 5 Refit the replenishment tank assembly.
- 6 Refit all processor side panels.
- ▶ 7 Fill the appropriate processing tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180). Ensure there are no leaks. ◀

To ensure correct operation of the pump, carry out the following running test:

- 8 Start the processor. The circulation pumps should start immediately.
- 9 Check there are no air locks in the circulation system by observing that the solution in the tank is being agitated. If an air lock is suspected, see the
 - ▶ ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180). ◀
- 10 Switch the processor off.
- 11 Check for leaks. Re-tighten all hose connections to the pump.

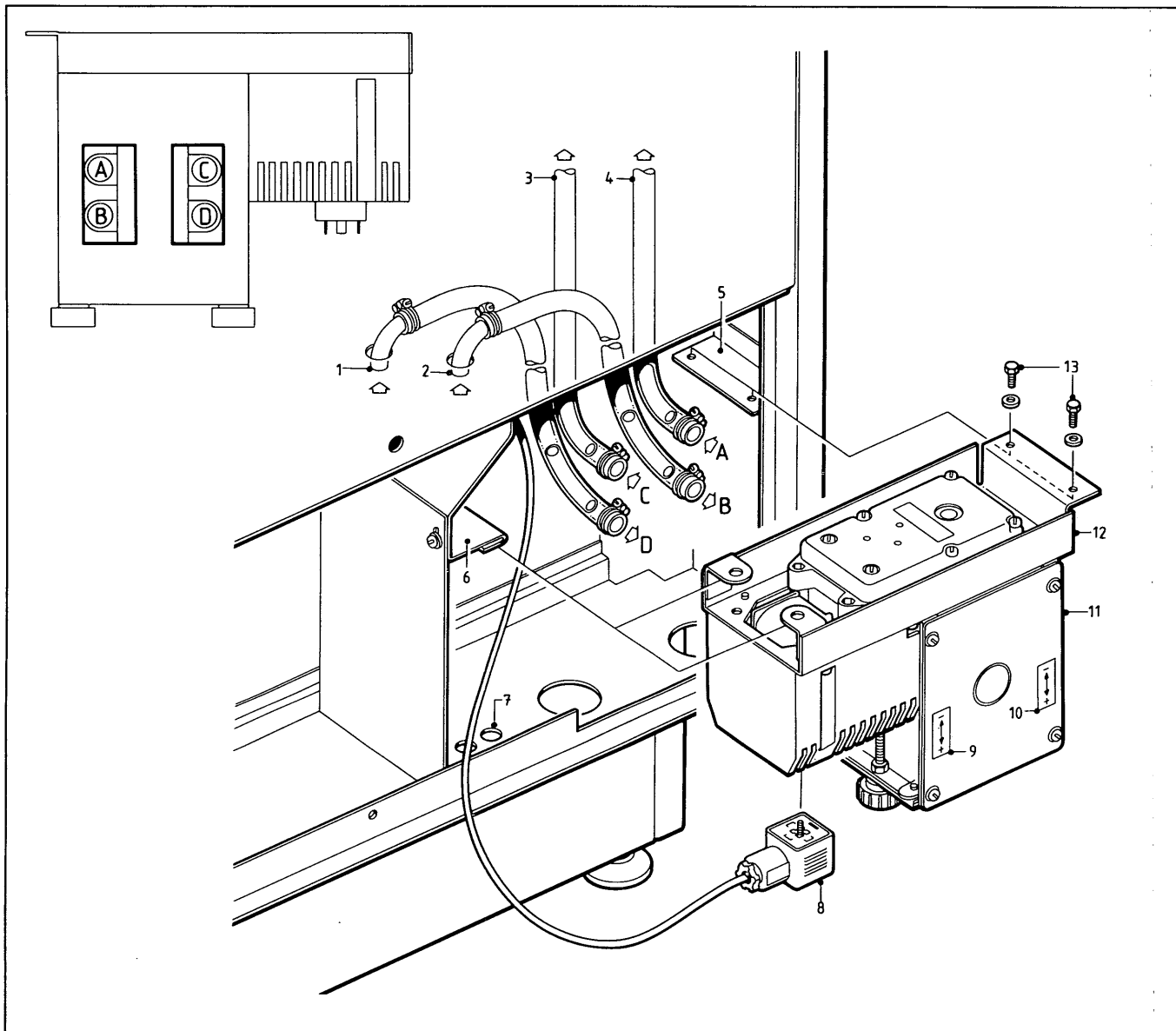
2.9 Circulation pump - dismantling

See figure 2.4.

The circulation pump can be dismantled to clean the pump chamber. The following sequence is the same for the developer and fixer circulation pumps.

Dismantling

- 1 Remove the circulation pump (see 2.8 above).
- 2 Release the four screws securing the clamp plate to the pump body. Remove the clamp plate.
- 3 Pull the pump chamber housing away from the pump body. Take care not to damage the large 'O' ring around the pump body.



Replenishment pump
Figure 2.5

- 4 Remove the small 'O' ring and plain washer from the impeller shaft, and pull the impeller off the shaft.

Re-assembly

Note

Replace the large 'O' ring if it is showing signs of wear or damage.

- 1 Refit the impeller to the shaft.
- 2 Refit the plain washer and the small 'O' ring onto the shaft.
- 3 Locate the pump chamber housing onto the pump body.
Note
The pump chamber housing is a tight fit over the large 'O' ring.
- 4 Refit the clamp plate. Do not tighten the screws.

Figure 2.5

- 1 From replenishment tank, developer (red pipe)
- 2 From replenishment tank, fixer (blue pipe)
- 3 To developer processing tank (red pipe)
- 4 To fixer processing tank (blue pipe)
- 5 Support bracket, right hand
- 6 Support bracket, left hand
- 7 Access hole, electrical connector
- 8 Electrical connector
- 9 Red label (developer)
- 10 Blue label (fixer)
- 11 Replenishment pump
- 12 Motor base plate
- 13 Securing screws

- 5 Ensure orientation of the pump output is correct for use on the developer or fixer solution (see 2.8, Installation sequence, operation 1 above).
- 6 Secure the clamp plate with the four screws.
- 7 Install the pump (see 2.8 above).

2.10 Replenishment pump

See figure 2.5.

Removal

To remove the replenishment pump, proceed as follows:

- 1 Isolate the processor from the electrical mains supply.
- 2 Remove the processor top cover and the lower front panel.
- 3 To prevent injury, remove the feed tray and paper detector assembly (see section 2-2.8).
- 4 Using the access hole in the floor of the lower electrical compartment, release the screw securing the electrical connector. Pull the electrical connector away.
- 5 Release the two hexagonal head screws and washers securing the right hand side of the motor base plate to the processor chassis.
- 6 Slide the replenishment pump assembly to the left to disengage the left hand side of the motor base plate from the support bracket. Carefully lift the pump assembly and withdraw it from the processor. Take care not to strain the flexible hose connections at the rear of the pump.
- 7 Identify the flexible hoses, ie to replenishment tank or to solution tank.
- 8 Hold the pump higher than the top of the replenishment tank, over a receptacle to catch any residual solution, and release the four hose clips at the rear of the pump. Pull the four flexible hoses off the connectors.

Note

It is not necessary to drain the replenishment tank if the open end of the hoses connected to the tank are retained in a position that is higher than the solution level in the replenishment tank.

Installation

To install the replenishment pump, proceed as follows:

- 1 Connect the four flexible hoses to the rear of the pump, as shown. Secure the hoses by tightening the hose clips.
- 2 Secure the electrical connector to the pump with the centre screw.
- 3 Locate the left hand side of the pump assembly into the support bracket, as shown, and slide the pump assembly to the right. Secure the right hand side of the pump assembly with the two hexagonal head screws and washers, as shown.
- 4 Refit the feed tray and paper detector assembly.
- 5 Refit the lower front panel.

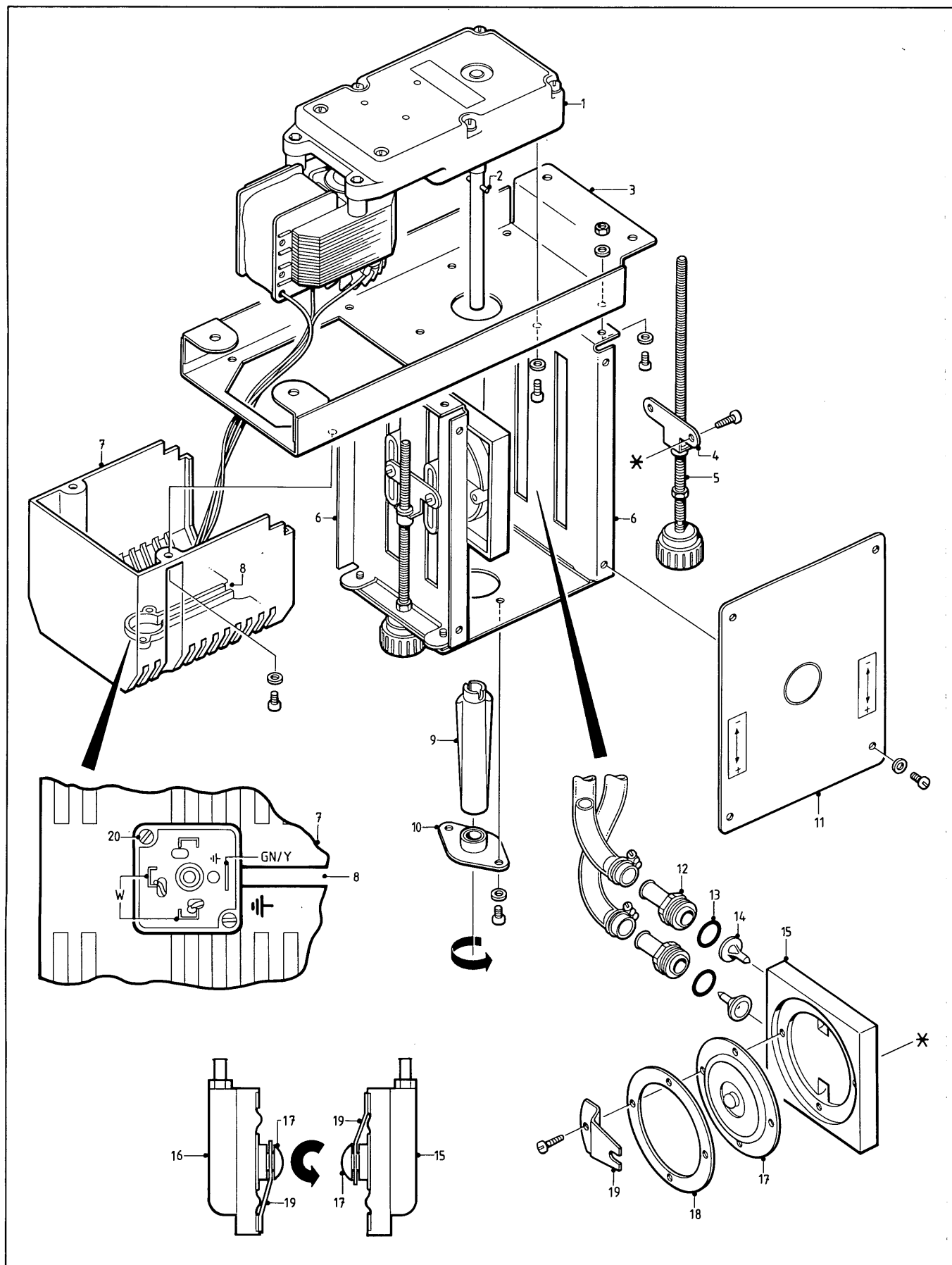


Figure 2.6

- 1 Motor
- 2 Locking pin
- 3 Motor base plate
- 4 Diaphragm support plate
- 5 Motor guard
- 6 Slot
- 7 Cam
- 8 Bearing flange assembly
- 9 Pump adjuster
- 10 Front plate
- 11 Hose connector
- 12 'O' ring
- 13 Valve
- 14 Return spring
- 15 Flange
- 16 Diaphragm
- 17 Diaphragm body
- 18 Securing screw, plug base
- 19 Actuator trunnion

To ensure correct operation of the pump, carry out the following running test:

- 6 Turn the pump adjusters anti-clockwise to the highest setting on the cam.
- 7 Start the processor and allow the solutions to reach operating temperature.
- 8 Insert a wedge of paper to hold the detector flaps open. Ensure the replenishment pump is switched on. Observe that replenishment solution is supplied to the developer and fixer processing tanks through the hooked replenishment pipes.
- ▶ 9 Adjust the replenishment rates. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180).
- 10 Remove the wedge of paper from the paper detector. Observe the replenishment pump is switched off.
- 11 Switch the processor off.
- 12 Check for leaks at the replenishment pump.

2.11 Replenishment pump - valves

See figure 2.6.

Removal

To remove the valves, proceed as follows:

- 1 Remove the replenishment pump assembly (see 2.10 above).
- 2 Remove the four hose connectors from the rear of the pump assembly.
- 3 Carefully remove each valve and 'O' ring.
- 4 Clean the valves in warm water and inspect the rubber cones for deterioration.

Installation

To install the valves, proceed as follows:

- 1 Locate the valves in the pump assembly. Ensure the valves are orientated as shown. Figure 2.6 shows the right hand upper and lower valves. The left hand upper and lower valves are orientated in the same way.
- 2 Replace the 'O' rings if they are showing signs of wear or damage. Locate the four 'O' rings.
- 3 Secure the four hose connectors.
- 4 Refit the replenishment pump assembly and carry out the running test (see 2.10 above).

2.12 Replenishment pump - diaphragms

See figure 2.6.

Note

The following procedure is the same for the developer and fixer pump diaphragms. Figure 2.6 shows the fixer pump diaphragm dismantled.

Removal

To remove the diaphragm, proceed as follows:

- 1 Remove the replenishment pump assembly (see 2.10 above).
- 2 Turn the adjustment knobs clockwise until the diaphragms are at their lowest point on the cam. Release the two self-tapping screws securing the diaphragm assembly to the actuator trunnion. From the rear of the pump assembly, carefully disengage the diaphragm assembly from the support side plate and remove the diaphragm assembly.
- 3 Release the four screws securing the return spring and flange to the diaphragm body. Remove the spring and gently prise out the flange and diaphragm.
- 4 Clean the body in warm water. Examine the diaphragm body for cracks, particularly in the recess.
- 5 Clean the diaphragm in warm water. Examine the diaphragm for signs of wear or damage.

Installation

To install the diaphragm, proceed as follows:

- 1 Locate the diaphragm in the diaphragm body with the screw holes aligned, as shown.
- 2 Locate the flange in the diaphragm body.
- 3 Locate the spring, as shown.

Note

The orientation of the spring is very important. The cam contact on the diaphragm is pushed by the rotation of the cam into the slot on the spring. The assembly of the spring is, therefore, handed.

- 4 Secure the spring, flange and diaphragm with the four screws.
- 5 Locate the diaphragm assembly in the support side plate, as shown. Secure the diaphragm assembly to the actuator trunnion with the two self-tapping screws.
- 6 Ensure full movement of the diaphragm assembly by operating the adjuster.
- 7 Refit the replenishment pump assembly and carry out the running test (see 2.10 above).

2.13 Replenishment pump - cam

See figure 2.6.

Removal

To remove the cam, proceed as follows:

- 1 Remove the replenishment pump assembly (see 2.10 above).
- 2 Turn the adjustment knobs anti-clockwise until the diaphragms are at their highest point on the cam.
- 3 Release the two screws and washers and remove the bearing flange assembly.
- 4 Carefully prise the cam away from the locking pin on the drive shaft, and slide the cam away.
- 5 Inspect the cam lobes for uneven wear.
- 6 Inspect the bearing flange assembly. Renew the assembly if the bearing is showing signs of wear or damage.

Installation

To install the cam, proceed as follows:

- 1 Slide the cam onto the drive shaft, as shown. Locate the cam slots onto the locking pin.
- 2 Grease the cam and bearing flange assembly with Rocol MT 265.
- 3 Secure the bearing flange assembly with the two screws and washers, as shown.
- 4 Refit the replenishment pump assembly and carry out the running test (see 2.10 above).

2.14 Replenishment pump - motor assembly

See figure 2.6.

Removal

To remove the motor assembly, proceed as follows:

- 1 Remove the replenishment pump assembly (see 2.10 above).
- 2 Release the two screws and washers securing the motor guard to the motor base plate. Allow the motor guard to hang free but do not strain any of the electrical connections.
- 3 Remove the cam (see 2.13 above).
- 4 Release the four screws, nuts and washers securing the motor base plate to the diaphragm support plates.
- 5 Release the two screws and remove the plug base by guiding the electrical wires through the slot in the motor guard.
- 6 Release the three screws and washers and remove the motor assembly from the motor base plate.
- 7 Remove and retain the locking pin from the motor drive shaft.

Installation

To install the motor assembly, proceed as follows:

- 1 Fit the locking pin to the motor drive shaft.
- 2 Secure the motor assembly to the motor base plate with the three screws and washers, as shown.
- 3 Secure the plug base to the motor guard with the two screws, as shown.
- 4 Secure the motor base plate to the diaphragm support plates with the four screws, nuts and washers, as shown.
- 5 Refit the cam (see 2.13 above).
- 6 Secure the motor guard to the motor base plate with the two screws and washers, as shown.
- 7 Refit the replenishment pump assembly and carry out the running test (see 2.10 above).

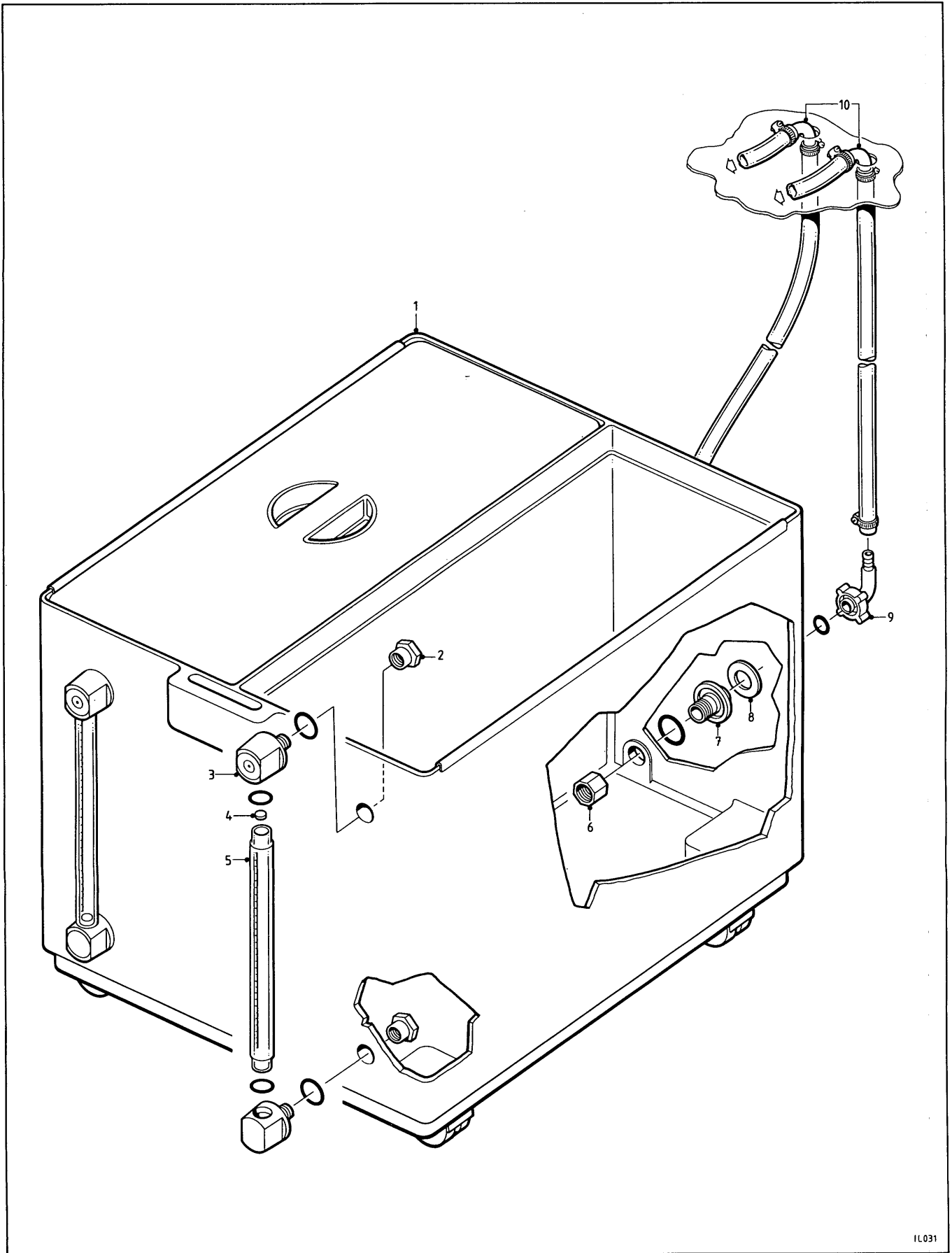
2.15 Replenishment tank assembly

See figure 2.7.

Removal

To remove the replenishment tank assembly, proceed as follows:

- 1 Remove the left or right hand lower side panel and carefully withdraw the replenishment tank assembly.



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Figure 2.7

- 1 Replenishment tank assembly
- 2 Connector
- 3 Sight tube connector
- 4 Float indicator
- 5 Level sight tube
- 6 Plastic nut
- 7 Connector
- 8 Identity ring
- 9 90° elbow (section 2.16)
- 10 90° plastic elbow (section 2.14)

- 2 Empty the replenishment tank.
- 3 Slacken the hose clips and pull the lower flexible hoses away from the 90° plastic elbows below the processor centre base plate.

Installation

To install the replenishment tank assembly, proceed as follows:

- 1 Connect the flexible hoses to the 90° plastic elbows, ensuring a continuation of colour coding in the line to the replenishment pump. Secure the hoses by tightening the hose clips.
- 2 Fill the replenishment tank with water. Ensure there are no leaks.
- 3 Empty the tank and ensure no debris remains in the tank.
- ▶ 4 Fill the replenishment tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180).
- 5 Refit the replenishment tank assembly into the processor. Do not strain or kink the flexible hoses.
- 6 Refit the left or right hand lower side panel.

2.16 Replenishment tank - solution level sight tubes

See figure 2.7.

Note

The following procedure is the same for the developer and fixer sight tubes.

Removal

To remove the level sight tube, proceed as follows:

- 1 Remove the left or right hand lower side panel and carefully withdraw the replenishment tank assembly.
- 2 Empty the appropriate section of the replenishment tank assembly.
- 3 From inside the tank, unscrew the two connectors and ease the sight tube assembly away. Take care not to lose the 'O' rings.
- 4 Carefully pull the sight tube connector from each end of the sight tube. Take care not to lose the 'O' rings and the float indicator.

Installation

To install the level sight tube, proceed as follows:

Note

Replace the 'O' rings if they are showing signs of wear or damage.

- 1 Lubricate the 'O' rings with silicon grease.
- 2 Push the sight tube connector and 'O' ring onto one end of the sight tube.
- 3 Insert the float indicator.
- 4 Push the second sight tube connector and 'O' ring onto the sight tube.
- 5 Locate the assembly onto the replenishment tank, as shown, with the sight tube the correct way up.
- 6 Secure the assembly with the two connectors.

- 7 Fill the replenishment tank with water. Ensure there are no leaks and that the float indicator shows the correct level.
- 8 Empty the tank and ensure no debris remains in the tank.
- ▶ 9 Fill the replenishment tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180).
- 10 Refit the replenishment tank assembly into the processor.
- 11 Refit the left or right hand lower side panel.

2.17 Replenishment tank - hose connector

See figure 2.7.

Note

The following procedure is the same for the developer and fixer hose connectors.

Removal

To remove the hose connector, proceed as follows:

- 1 Remove the left or right hand lower side panel and carefully withdraw the replenishment tank assembly.
- 2 Empty the appropriate section of the replenishment tank assembly.
- 3 Slacken the hose clip and pull the flexible hose away from the connector.
- 4 From inside the tank, unscrew the plastic nut and withdraw the hose connector assembly. Take care not to lose the 'O' ring.
- 5 Release the locking ring and separate the 90° elbow from the connector. Take care not to lose the 'O' ring and colour coded identity ring.

Installation

To install the hose connector, proceed as follows:

Note

Replace the 'O' rings if they are showing signs of wear or damage.

- 1 Assemble the elbow and connector, as shown.
- 2 Secure the connector assembly to the replenishment tank with the plastic nut, as shown.
- 3 Secure the flexible hose to the connector with the hose clip.
- 4 Fill the replenishment tank with water. Ensure there are no leaks.
- 5 Empty the tank and ensure no debris remains in the tank.
- ▶ 6 Fill the replenishment tank with solution. See the ILFOSPEED 2240 Instruction manual (processors up to serial number 23179) or the ILFORD 2240RC Operating manual (processors from serial number 23180).
- 7 Refit the replenishment tank assembly into the processor.
- 8 Refit the left or right hand lower side panel.

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