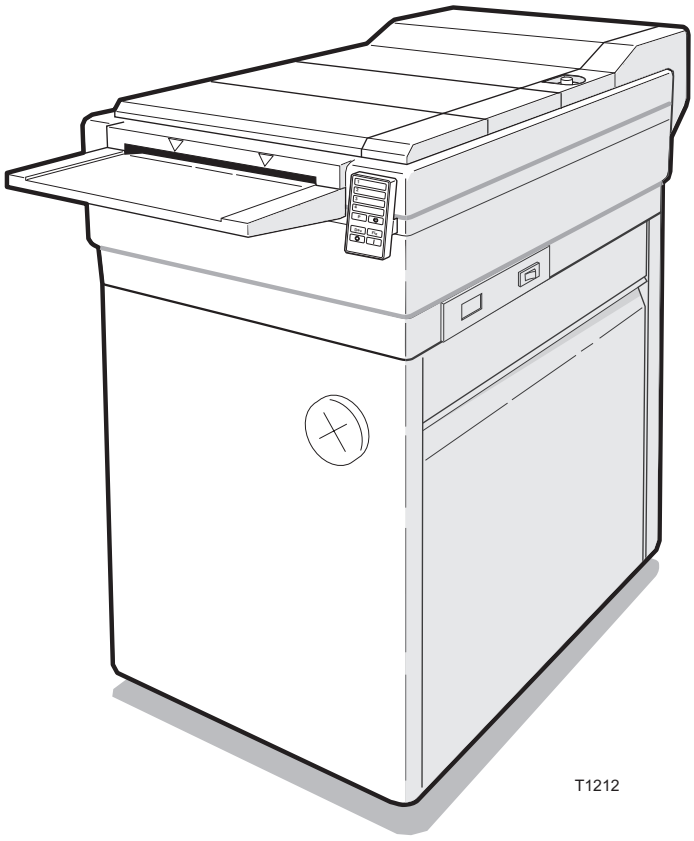
MultiLine 400
MultiLine 15



This manual is for Service Technicians only and the directions given must not be followed by unauthorized personnel. Always read the Safety Instruction Manual part No 21741 before starting up the equipment and keep it with the machine for reference at all times.

Edition DD, January 2002 **Part No 11964**

GENERAL INFORMATION

This manual is published by: **Glunz & Jensen A/S**
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This manual is valid for: **MultiLine 400** processors from serial no **9172-2226**
MultiLine 15 processors from serial no **90163-0234**

The serial no is specified on the processor nameplate located on the backside of the machine next to the film basket.

The manual was written and illustrated using the best possible information available at the time of publication.
Any differences between the manual and the equipment reflect improvements introduced after the publication of the manual.
Changes, technical inaccuracies, and typographic errors will be corrected in subsequent editions.

As a part of our policy of continuous improvement, we reserve the right to alter design and specifications without further notice.

IMPORTANT!

- **Approvals:** The processor is manufactured according to legal demands. For compliance with the requirements the equipment is tested by Underwriters Laboratories or other accredited authority. Approvals will appear from the labels attached to the processor name plate or the frame part of the processor.
- **Intended use of the equipment:** Development of photographic materials as specified in chapter 1 in the Service Manual.
- **Installation:** It is the responsibility of the owner and operator/s of this processor, that the installation is made in accordance with local regulations, and by engineers authorized to carry out plumbing and electrical installations.
  Installation, service and repair must be performed only by service technicians who are trained in servicing the equipment. The installation procedure is described in chapter 2 “INSTALLATION”.
  The manufacturer cannot be held responsible for any damage caused by incorrect installation of this processor.
- **Technical data:** Observe technical data from the processor name plate located on the rear panel of the processor.

SILVER RECOVERY

To avoid any damage (ex. corrosion of the fixer tank heater element) a silver recovery unit can be connected to the processor!

WARNINGS, CAUTIONS AND NOTES!

Throughout the manual warnings, cautions, and notes are written in italics on a grey background like the example below:

CAUTION! Fuses should only be changed by authorized personnel.

Explanation:

NOTE!
The operator should observe and/or act according to the information in order to obtain the best possible function of the equipment.

CAUTION!
The operator must observe and/or act according to the information in order to avoid any mechanical or electrical damage to the equipment.

WARNING!
The operator must observe/and or act according to the information in order to avoid any personnel injury.

AUTHORIZED PERSONNEL

Some notes, cautions and warnings refer to Authorized personnel or Service Technician like the example below:

NOTE! Authorized personnel only.

NOTE! Call service technician.

Explanation:

Authorized personnel:
Persons inside your company who are familiar with all the processors functions, change in programs and maintenance.

Service Technician:
Service personnel from your local dealer, who is trained in servicing the film processors.

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1. TECHNICAL SPECIFICATIONS

PROCESSING MATERIAL

- Imagesetting on RC paper and polyester film.
- Camera line exposures on rapid access films.
- Contact work on contact film/paper, rapid access film and daylight film/paper.
- Laser scanner positives on rapid access films.
- Halftones on rapid access films.
- Paper contact work.

FILM WIDTH

7.0 - 40 cm (2.8"-15.7")

FILM LENGTH

15 - 1000 cm (5.9"-393.7")

FILM THICKNESS

0.08 - 0.18 mm (0.003"-0.007")

MECHANICAL SPECIFICATIONS

DEV. TIME
Max. 15 - 60 sec.

TRANSPORT SPEED
25 - 100 cm/min. (9.8-39.4 in/min")

DRY-TO-DRY TIME
Min. - Max. 63 - 252 sec.

CONVERSION TABLE

Dev. time in sec.	Film speed cm/min. (inch/min.)	Dry-to-dry in sec.
60	25 (9.8)	252
55	27 (10.6)	231
50	30 (11.8)	210
45	33 (13)	189
40	38 (15)	168
35	43 (16.9)	147
30	50 (19.7)	126
25	60 (23.6)	105
20	75 (29.5)	84
15	100 (39.4)	63

TEMPERATURES
Dev :	20 - 40°C	(68-104°F)
Fix :	20 - 40°C	(68-104°F)
Dryer :	20 - 70°C	(68-158°F)

TANK CAPACITIES
Dev:	12.7 litres	(3.4 gal.)
Fix:	12 litres	(3.2 gal.)
Wash:	10.5 litres	(2.8 gal.)

HOSE CONNECTIONS
Water supply: 12 mm reinforced hose with 3/4" connection nut.

Drains:

Dev:	25 mm	(1")
Fix:	25 mm	(1")
Wash:	25 mm	(1")

(Water hose and drain fittings are delivered with the machine)

Dryer/Air exhaust: 100 mm (4")

WATER SUPPLY
Consumption:

in operate:	1,5 or 3,0 l/min	(0.4 or 0.8 gal.)
in stand by:	0 l/min	
Pressure:	1.5 - 4 bar	(22-60 psi)
Temperature:	5 - 40°C	(41-104°F)

DEVELOPER FILTER
Some processors are equipped with a developer filter. Information about the developer filter is specified in a separate manual delivered with the processor.

NOISE LEVEL

in operate:	<70 dB(A)
in stand by:	<70 dB(A)

INSIDE DIMENSIONS, LARGE DAYLIGHT CASSETTE

The large daylight cassette (optional) max. inside dimensions are:

Width:	47.5 cm	(18.7")
Depth:	18.5 cm	(7.3")
Height	21.5 cm	(8.5")

The large daylight cassette takes any standard PTS (Photo Type Setting) cassette that fits into the above dimensions.

DIMENSIONS, PROCESSOR

(See Fig. 1/1)

Width **(W)**: 66.5 cm	(26.2")
Depth **(D1)**: 118 cm incl. film basket	(46.5")
Depth **(D2**): 20 cm (Feed table or cassette)	(7.9")
Height **(H1**): 34 cm	(13.4")
Height **(H2)**: 71 - 73 cm (adjustable)	(28"-28.8")
Height **(H3)**: 95 cm (adjustable)	(37.4")

WEIGHTS

See APPENDIX A.

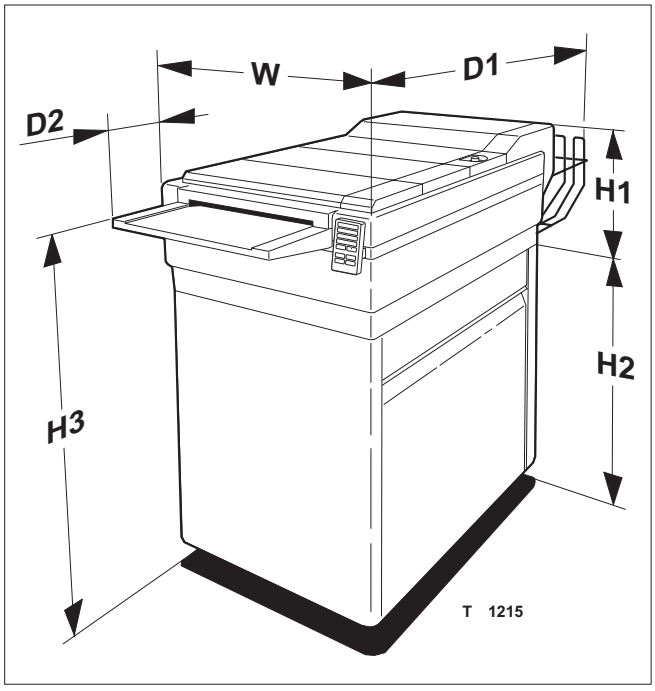


Fig. 1/1 Dimensions

ELECTRICAL SPECIFICATIONS

POWER SUPPLY
230 V AC, Single Phase + PE 50-60 Hz,
fused by 12A.

VOLTAGE TOLERANCES
230V +10%, -14%

POWER CONSUMPTION
Max: 2600 Watt

POWER CORD WITH INLINE GFCI RELAY
Some models are equipped with the inline GFCI relay (Ground Fault Circuit Interrupter).

2. INSTALLATION

PREPARATIONS BEFORE INSTALLATION

To avoid waste of your production time as well as the time it will take for the engineer to install the machine, some preparations should be made before delivery of the processor.

ENVIRONMENTAL REQUIREMENTS

Provide a heating and ventilating system capable of maintaining room temperature between 10 and 25°C (50-77°F) and relative humidity (RH) between 50 and 60%.

SPACE REQUIREMENTS

Decide where the processor shall be placed and make sure that the free space around the machine will be approx. **1m (3 ft.).** This makes servicing possible.

WATER SUPPLY

A water tap should be installed in the darkroom close to the installation site - Max. distance to the machine **2-3 m (approx. 6-10 ft.)**. See chapter 1 for specifications. The water hose is included with the delivery.

DRAIN OUTLETS

The drain outlet should have a funnel shape to allow for proper drain line routing.
The recommended distance from the machine to the drain is **0.5-2 m (app. 2-6 ft.)**.

NOTE! Copper or brass should not be used in the drainage system as fixer containing silver might attack it. Therefore plastic (PVC) or rubber is recommended.
(See also "DRAIN CONNECTIONS").

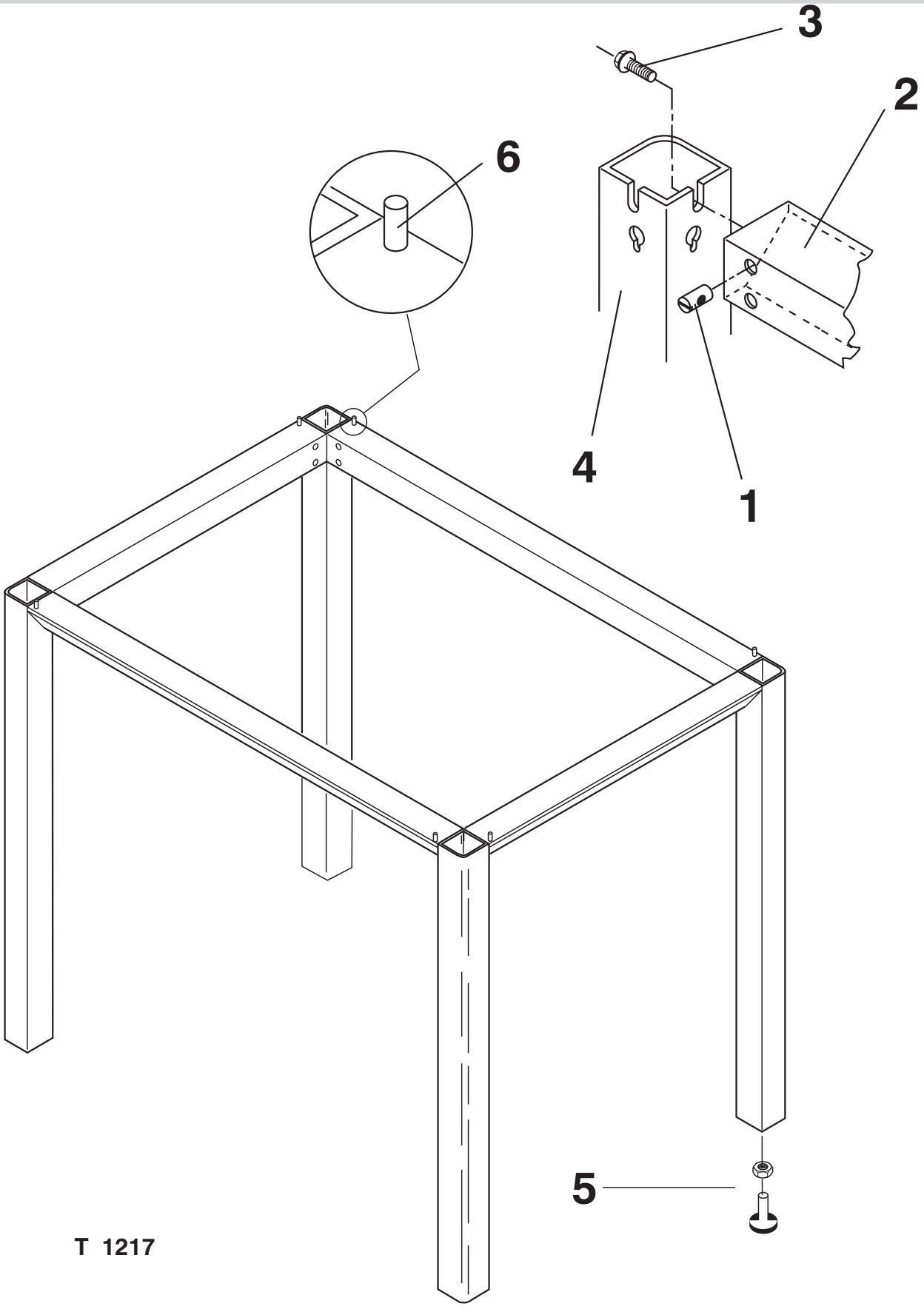
NOTE! If silver recovery is desired, the 25 mm (1") drain hose from the fixer tank can be connected to a silver recovery unit.
(See chapter 3, "ECOLOGICAL UNITS").

CLEANING FACILITIES

For cleaning purposes it would be convenient to have easy access to a water tap and a sink, where racks, rollers and guides can be washed and chemicals mixed. The minimum recommended size of the sink is **80 x 40 cm (32" x 16")**.

POWER CONNECTIONS

The electrical installation must be made according to local regulations.
If not already there, a main power outlet should be installed in the room, where the machine will be situated. Max. distance to the machine approx. **2 m (6 ft.).** The requirements are specified in chapter 1.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UNPACKING

Carefully unpack the machine and check that all parts are present (see list in APPENDIX A) and in good condition.
Delivered with the processor are the different parts needed for the installation and parts for minor repairs:

Parts delivered ...
are specified on a packing list delivered with the processor.

Installation kit ...
is delivered with the processor in a cardboard box. The kit consists of different parts needed for the installation. The parts are specified on a separate list included.

Spareparts kit ...
is delivered in a small red box. Inside is a label with list of enclosed spareparts, numbers of each sparepart and sparepart order numbers.

Make sure that all parts are present and in good condition.

MECHANICAL INSTALLATION

GENERAL

An installation kit is included with the processor.
It comprises the different parts that are necessary to make the installation.
See APPENDIX A for further information.

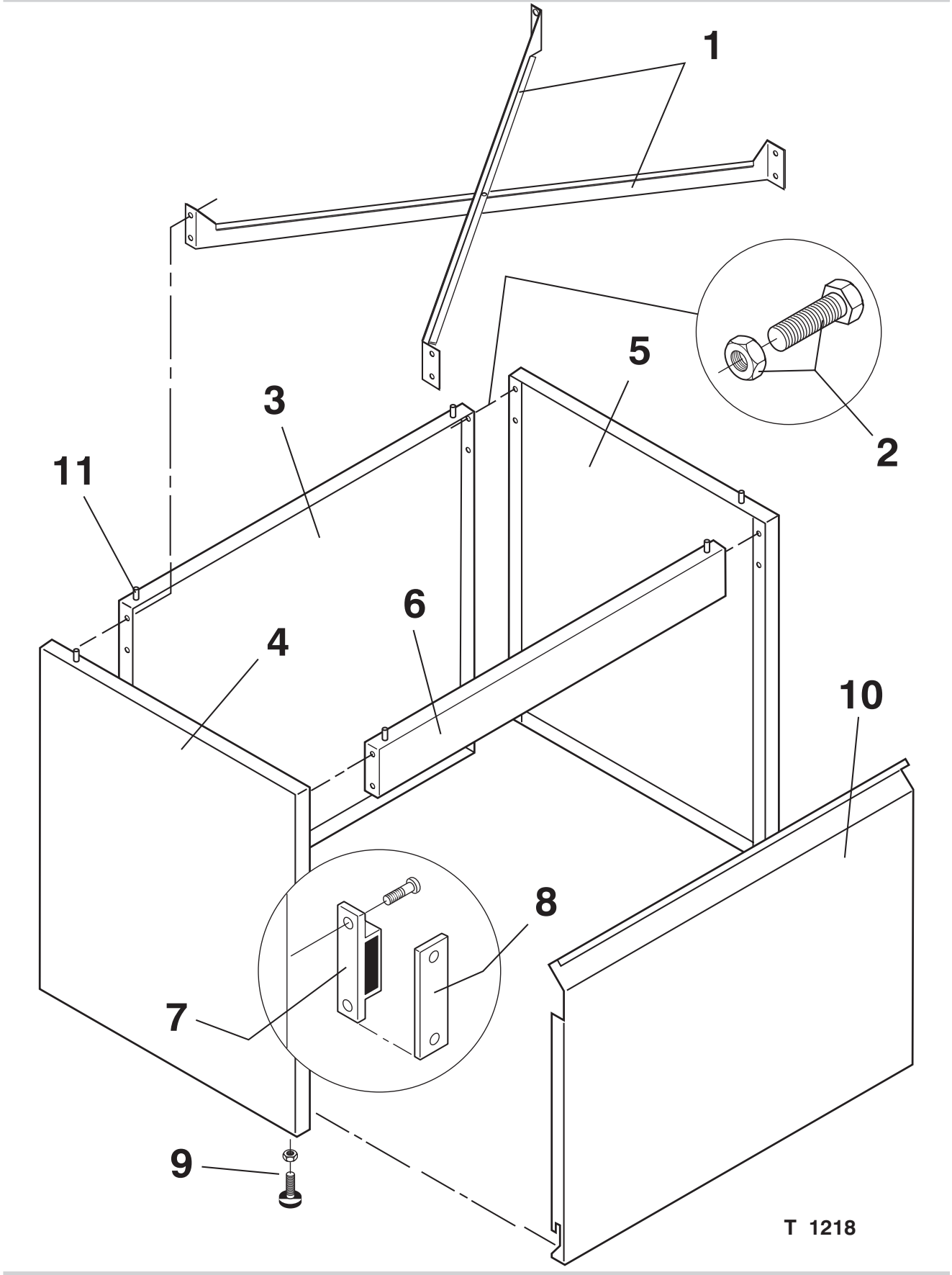
ASSEMBLING THE STAND

The machine is delivered with either an open stand or a closed stand.
An open stand consists of a frame with four legs.
A closed stand consists of 5 panels and 2 bracing profiles.
Assemble the stand as described in the following:

OPEN STAND
(See illustration opposite)

- Insert the bushings **(1)** into the horizontal frame parts **(2)**.
- Screw the bolts **(3)** into the bushings but do **not** tighten yet.
- When all of the horizontal frame parts are fitted with bolts they can be assembled with the legs **(4).**
- Tighten all bolts hard.
- Screw the adjustable legs **(5)** into the frame and level out emperically.
- Place the processor on top of the stand and be sure that it fits outside the pins **(6)** on the stand.

CLOSED STAND
(See next page)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CLOSED STAND

(See illustration opposite)

- Assemble the 2 identical bracing profiles **(1)** as shown.
  Use the bolts and nuts **(2).**
- Assemble the left side panel **(3)** with the front **(4)** and rear panel **(5)** using only the set of holes nearest to the ground.
  Do not tighten the bolts yet.
- Now insert the bracing assemblance **(1)** together with the upper right panel **(6)** and fit to the frame using the upper set of holes.
- Tighten all bolts.
- Mount the locking magnets **(7)** on the front and rear panel. The flat counterpart **(8)** shall not be used.
- Screw the adjustable legs **(9)** into the frame and level out emperically.
- Insert the lower right panel **(10)**.
- Place the processor on top of the stand, and be sure that it fits outside the pins **(11)** on the stand.

LEVELLING OF THE MACHINE

NOTE! The machine must be placed on a steady surface, so that it does not shake and the chemicals cannot be splashed from one section to the other.

Place the machine in its final position. Carefully level it out by means of the four legs underneath the stand. Check with a level. Do not rely on the floor being absolutely in level.

MOUNTING OF FEED TABLE / LARGE DAYLIGHT CASSETTE

The machine is delivered with a FEED TABLE, but a LARGE DAYLIGHT CASSETTE can be ordered as an accessory (ask your local dealer). Either one of these now should be fixed onto the processor:

FEED TABLE

The figure below shows how to fix the feed table **(1)** by means of the 2 special locking pins **(2)** which only have to be turned 90° clockwise to lock.

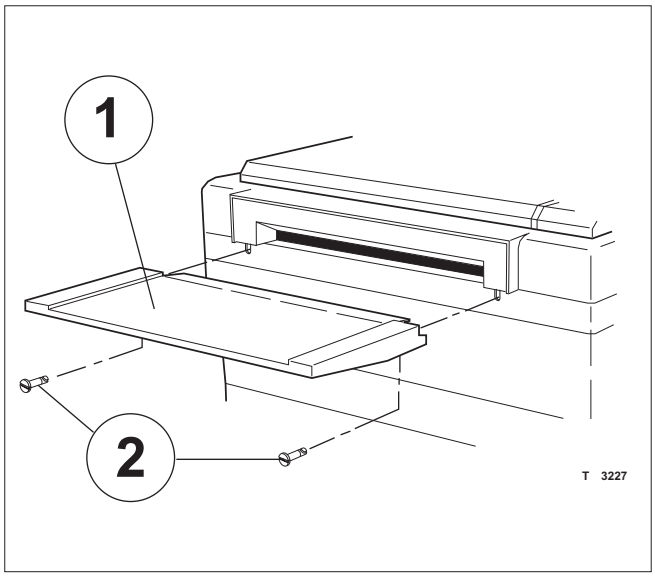


Fig. 2/1 Feed Table

LARGE DAYLIGHT CASSETTE

The figure below shows how to fit the large daylight cassette **(1)** onto the processor.
When the locking pins **(2)** have been locked (turned 90° clockwise) the shelf **(3)** and input roller **(4)** are placed in the cassette

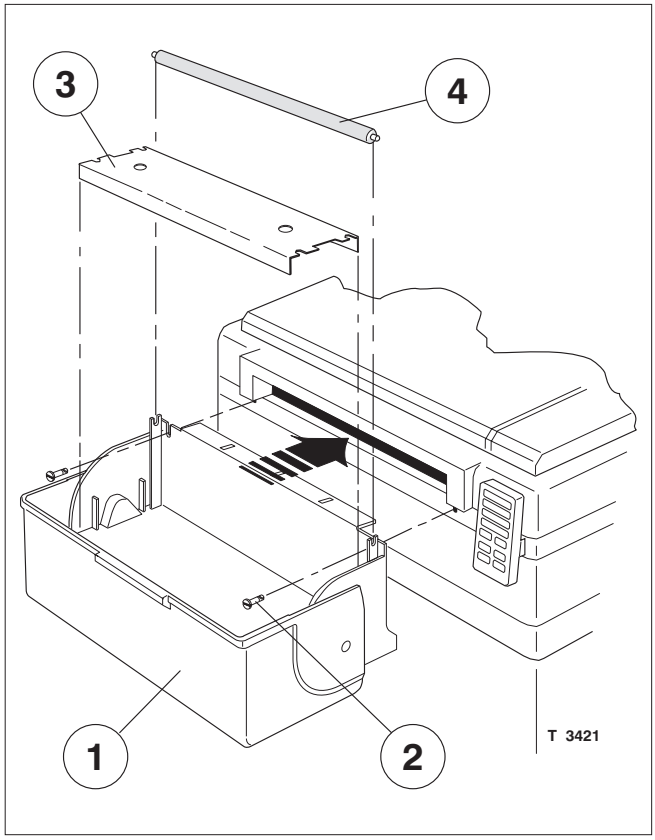


Fig. 2/2 Large Daylight Cassette

"THROUGH-THE-WALL" INSTALLATION

(See figure below).
If the processor has to be installed in a "through-the-wall" installation, a hole has to be cut in the wall, through which the machine is going to be installed.
The hole should be cut **min. 100 mm (4")** wider than the max. width of the machine (see chapter 1) and **min. 200 mm (8")** higher than the feed table surface. Walls thicker than **50 mm (2")** should be cut with a slope (**approx. 45**°) above the feed table.

When the machine has been placed in position, the hole in the wall should be reduced to the exact size of the machine by means of a light tight material **(thickness 7 - 7.5 mm**).
For this purpose a special TWO-ROOM KIT is available (ask your local dealer).

With this kind of installation it should be taken into consideration that it must be possible, without any difficulties, to remove the top cover and racks from the machine for cleaning and servicing purposes.
The figure below shows the principle in a "Through-the-wall" installation.

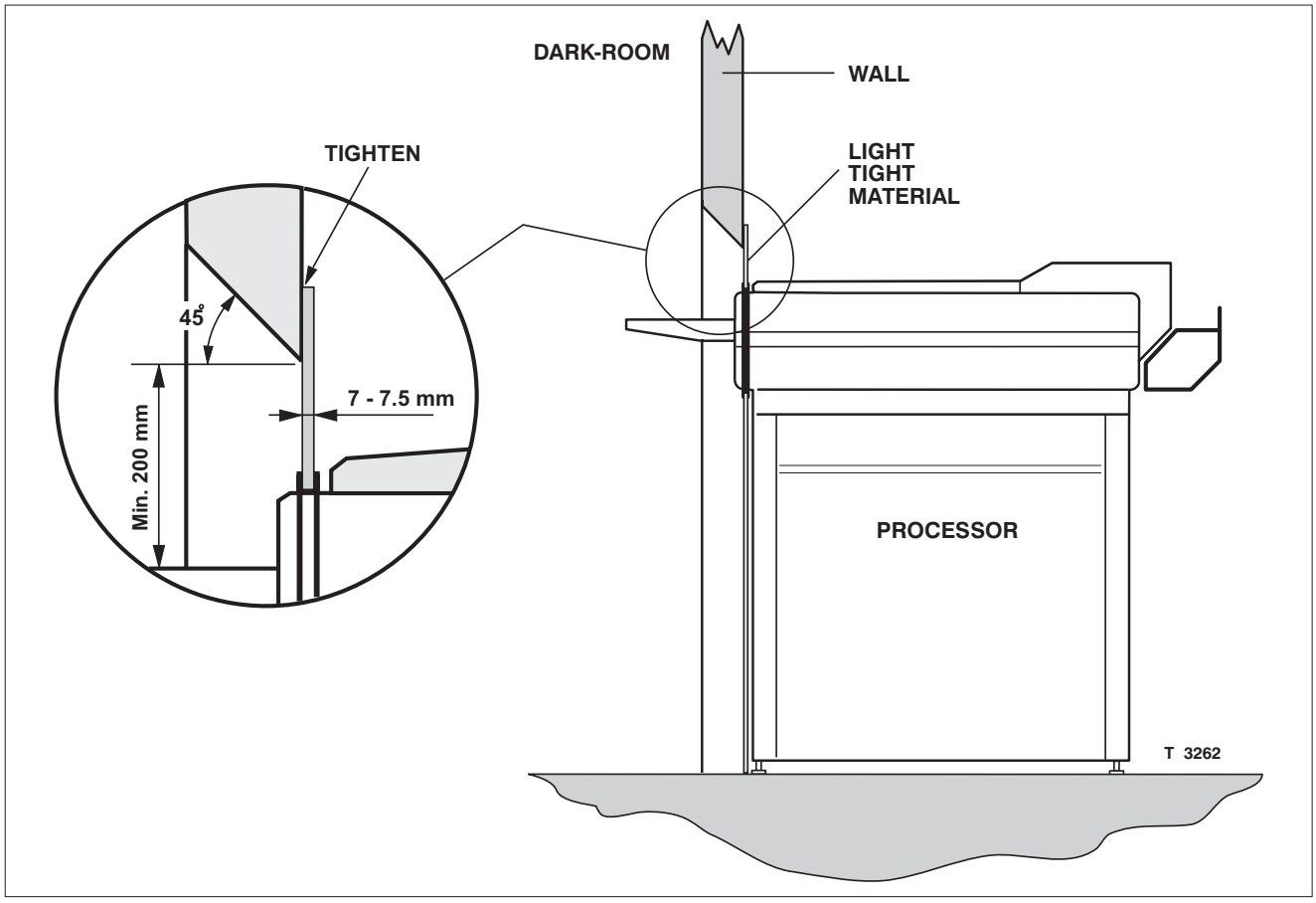


Fig. 2/3 "Through-The-Wall" Installation

WATER CONNECTION

The water supply connection is made by means of the plastic hose delivered with the machine.
As shown in the figure below this hose must be connected between the water tap and the water inlet solenoid valve located at the left underneath the dryer section.
The hose can be connected to a water tap with 1/2" or 3/4" WRG male thread. When connecting to 3/4", the reduction nipple shall not be used.

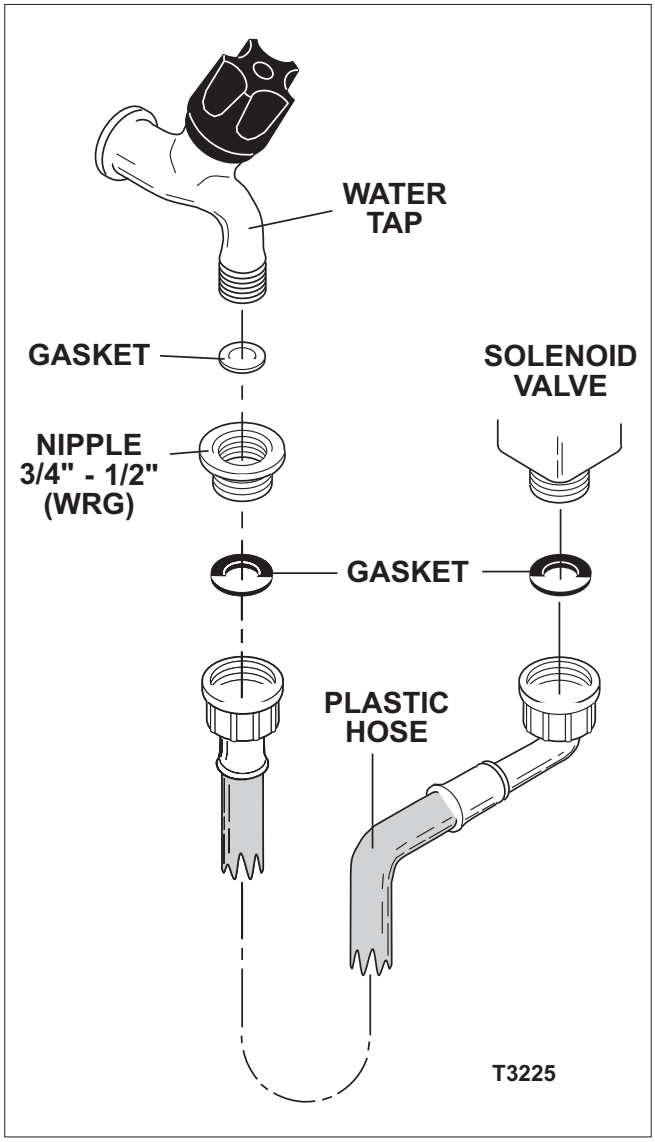


Fig. 2/4 Water connection

DRAIN CONNECTIONS

Drain connections must be made according to the customer's specifications and local regulations.
Drain connections are made underneath the machine (see the figure below). The drain fittings are delivered with the equipment.
Connect the drains from the DEV and FIX baths at the lefthand side to waste-chemical containers and the drain from the wash tank at the righthand side to a drain **0.5-2 m (app. 2-6 ft.)** from the machine.
Make sure there is a positive fall from the machine to the drains, and the hoses must not sag or form water traps.
See also chapter 0, "ENVIRONMENTAL PROTECTION".

NOTE! Do not connect the plastic hoses directly to the tank without the rubber fittings, as the hose material can cause corrosion of the tank material.

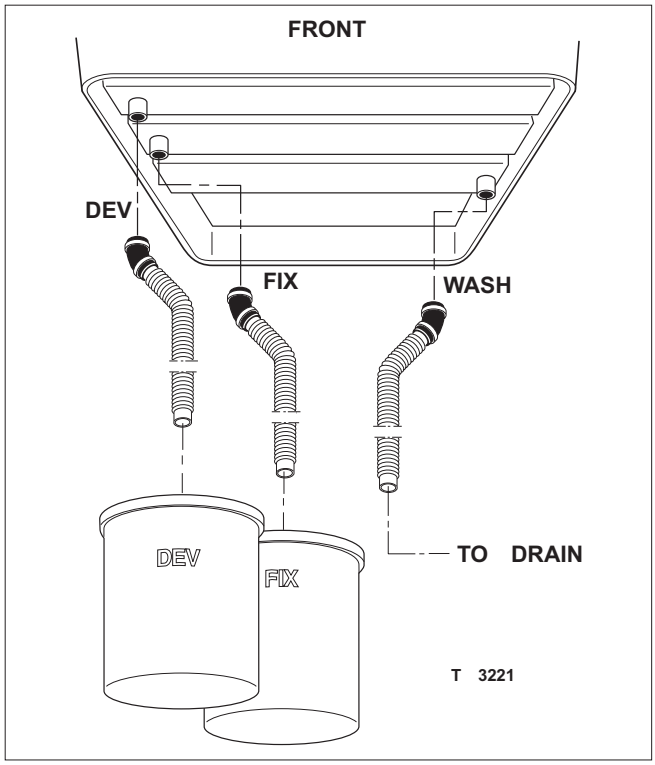


Fig. 2/5 Drain connections

REPLENISHMENT HOSES

The replenishment hoses are located underneath the machine.

NOTE!
SEE "APPENDIX A" FOR CORRECT CONNECTION OF REPLENISHMENT HOSES.

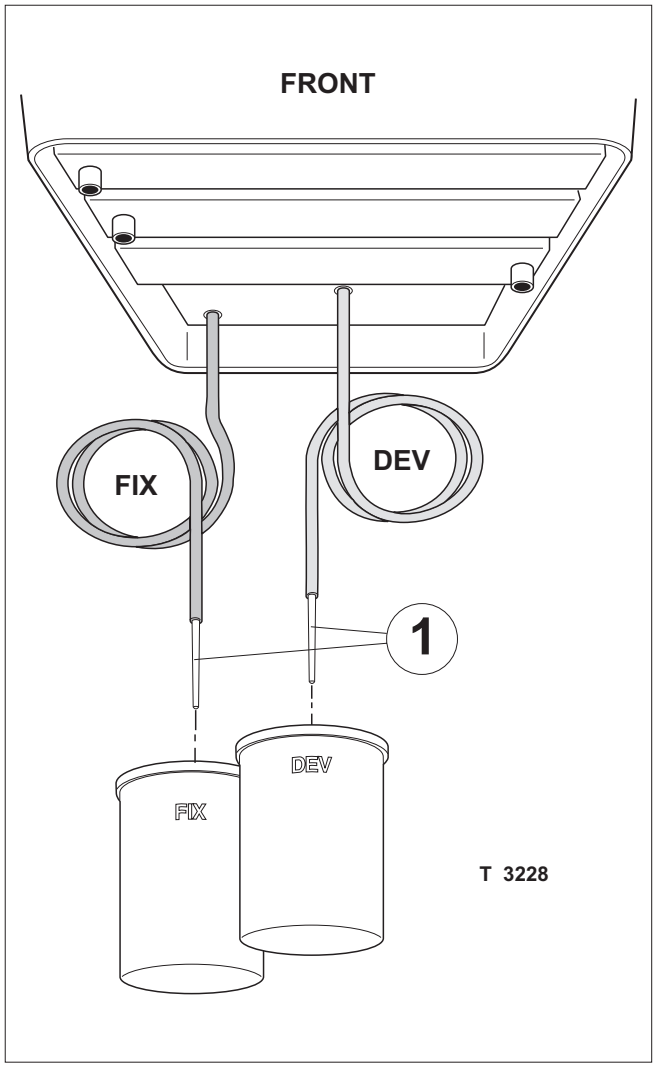


Fig. 2/6 Replenishment hoses

EXHAUST INSTALLATION

The processor is equipped with a scavenger fan to remove chemical vapours from inside of the machine. The fan is placed in the righthand side underneath the dryer cover.
For this purpose the machine can also be connected to an external exhaust system by means of a specially designed flange which has to be connected to the dryer cover at the backside of the processor (see the figure below). If you wish to remove the hot air from inside of the machine also, a similar connection should be made on the opposite side of the dryer cover. Then connect a **100 mm (4")** exhaust hose from the flanges to the external exhaust system.
The extra flange is not delivered with the processor but can be ordered seperately (ask your local dealer).

NOTE! When connecting the machine to an external exhaust system, the exhaust rate should be adjusted to max. 15m3/h (530 ft3/h). Otherwise it can be difficult to maintain correct working temperatures and the expension of chemicals may increase unnecessarily

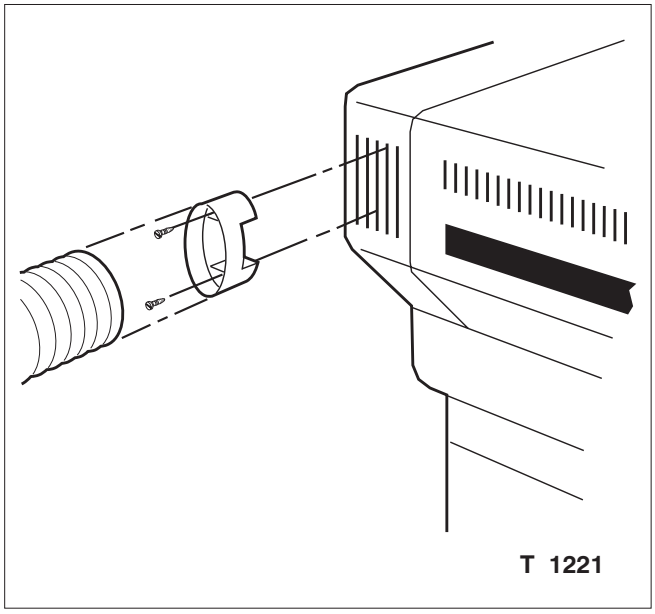


Fig. 2/7 Exhaust flange

ELECTRICAL INSTALLATION

MAIN POWER OUTLET

TECHNICIANS ONLY!

The electrical installation must be made according to local regulations.
If not already there, a main power outlet should be installed in the room next to the machine.
The requirements are as specified in chapter 1.

MODIFICATION FOR TRANSFORMER

If the machine is installed in countries where the voltage is different from 230V the following modification has to be made in the electronics drawer for **Transformer M1:**
(See the figure below)

-
- Disconnect power cord.
- Locate terminal block on the noise filter PCB.
- Reconnect the wires according to information below.

If the voltage is 200 or less:

- Mount the red wire in the position of the white wire and vice versa.

If the voltage is 240 or more:

- Mount the yellow wire in the position of the white wire and vice versa.

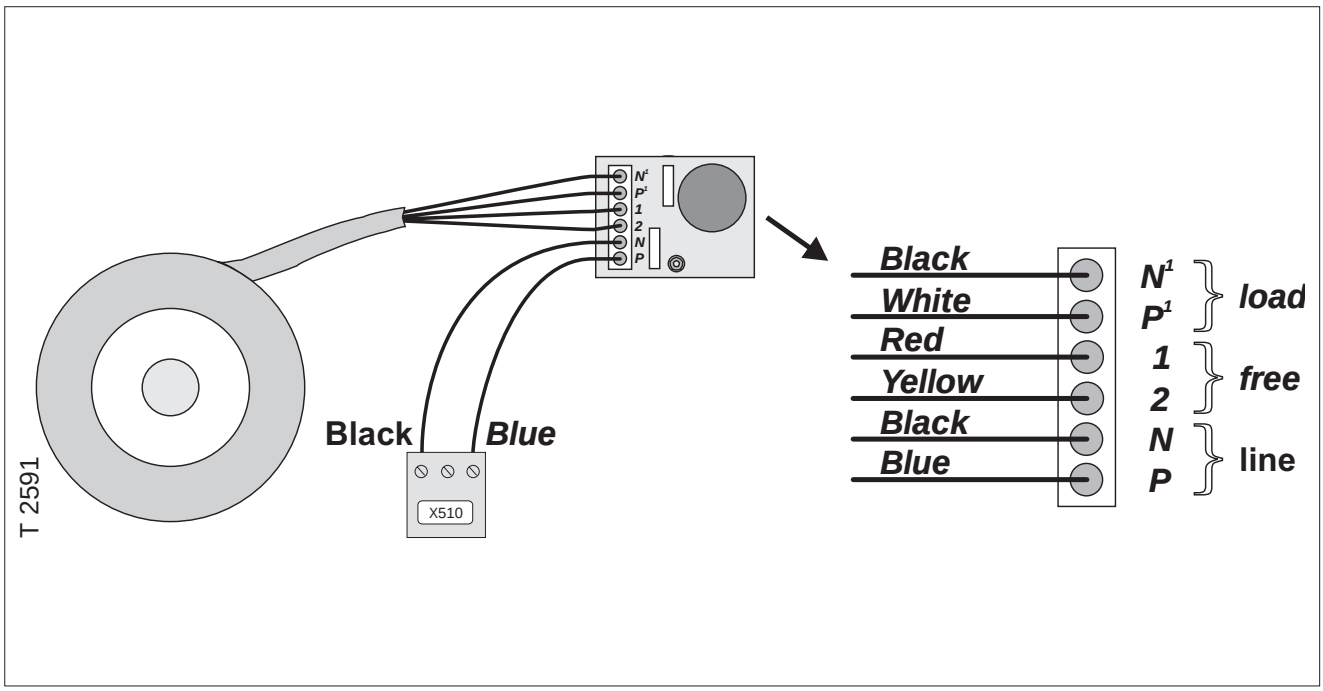


Fig. 2/8

MAIN POWER CONNECTION, USA-MODELS

Processors for USA are shipped wired for single phase 208/220V operation only.

All plugs and receptacles for this single phase connection should be the standard Mational Electrical Manufacturers Association (NEMA) polarized configuration L6-15 and be Underwriters Laboratory (UL) listed.

Processors for USA are proverded with a 16 awg. 3 conductor power supply cord with a NEMA configuration L6-15 U.L. listed 15 amp single phase 250V + PE twist-lock power plug such as a Harvey Hubbell Inc. type Insulgrip 4570-C.
For the proper receptacle please refer to your local electrician.

TIMER

If you wish to connect the processor to an external timer it is possible to do so by means of the special cable delivered with the installation kit (see chapter 8).
The purpose of the timer is to start up the processor e.g. half an hour before start of working hours. This way the processor has reached the correct working temperatures when production starts.
The operator must be able to stop the processor manually but can only do so if the timer relay is “OFF”. Therefore the “ON”-time of the timer relay should be set to the shortest possible time.

Connect the processor to the timer as shown on the figure below.

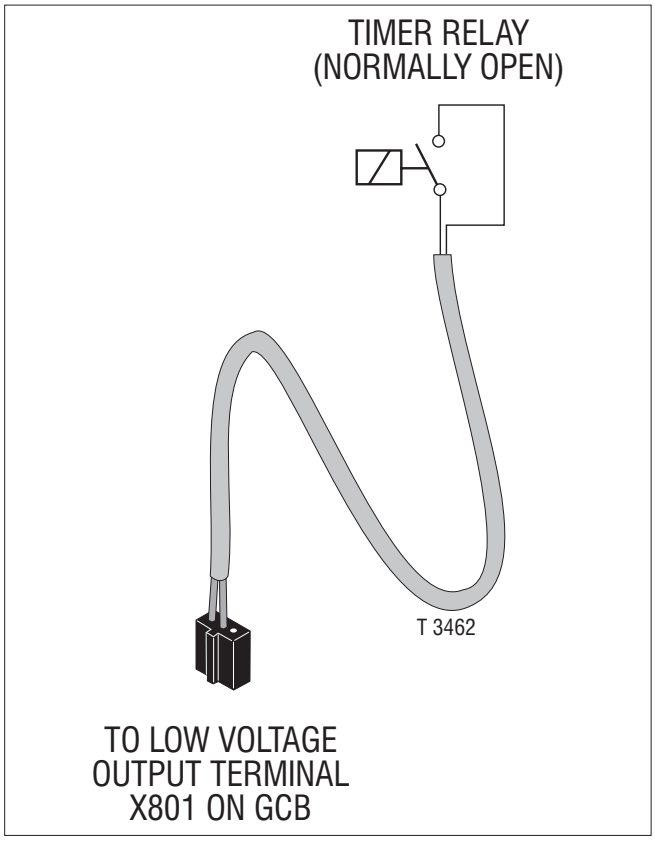


Fig. 2/9 Timer-connection

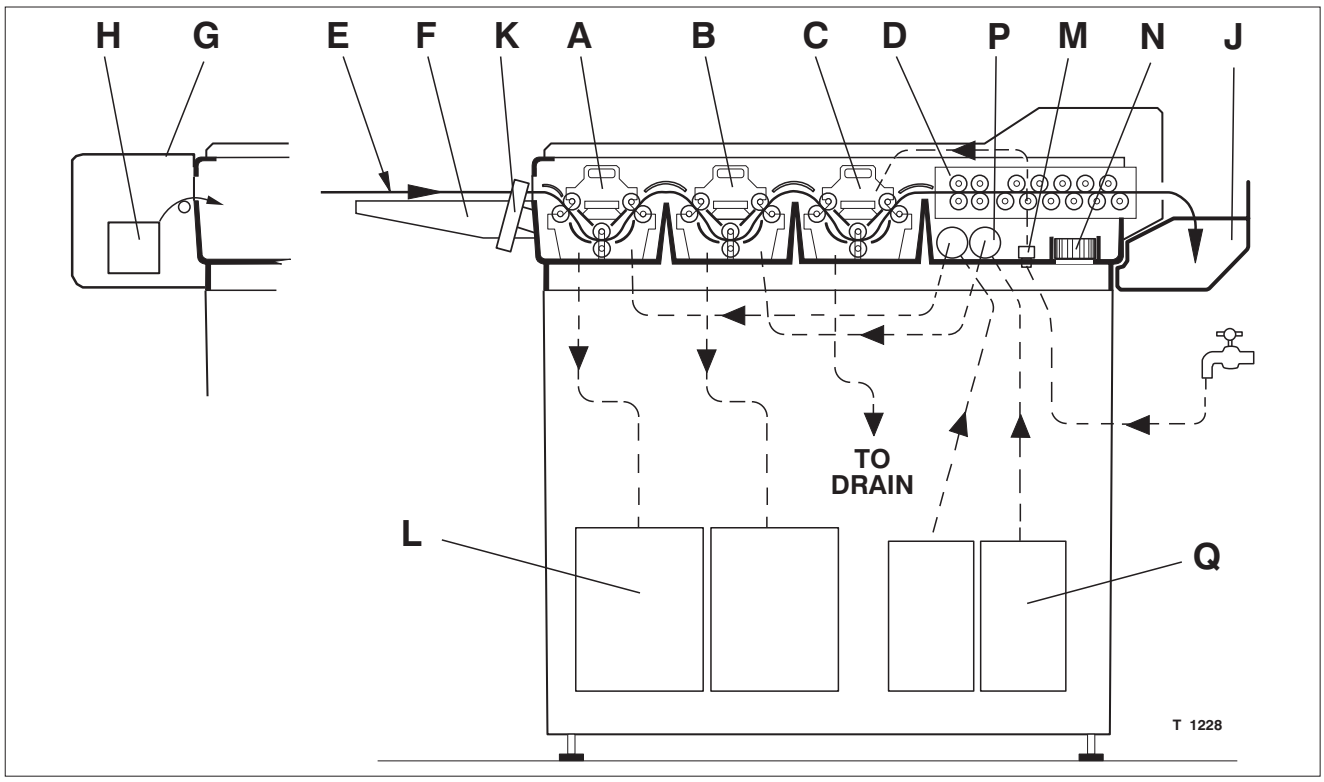
3. FUNCTIONAL DESCRIPTION

GENERAL

The processor contains 4 major sections (See illustration below): Developer **(A)**, fixer **(B)**, wash **(C)**, and dryer section **(D).** Each section performs a basic function to change the exposed film into a fully developed and dry film, ready for handling. The film material **(E)** is fed into the machine from the feed-table **(F)**. If the machine is equipped with a daylight cassette **(G)** both film and paper from PTS-cassettes **(H)** can be processed.

At the processor entrance the transport roller system takes over and leads the film safely through each of the four sections at a uniform speed and special guides make sure that it passes smoothly from one section to another.
When the film leaves the machine, it lands in the film basket **(J)**.

The operation of the processor is handled by the Control Box **(K)** (see description in chapter 4).



DEVELOPER/FIXER SECTIONS

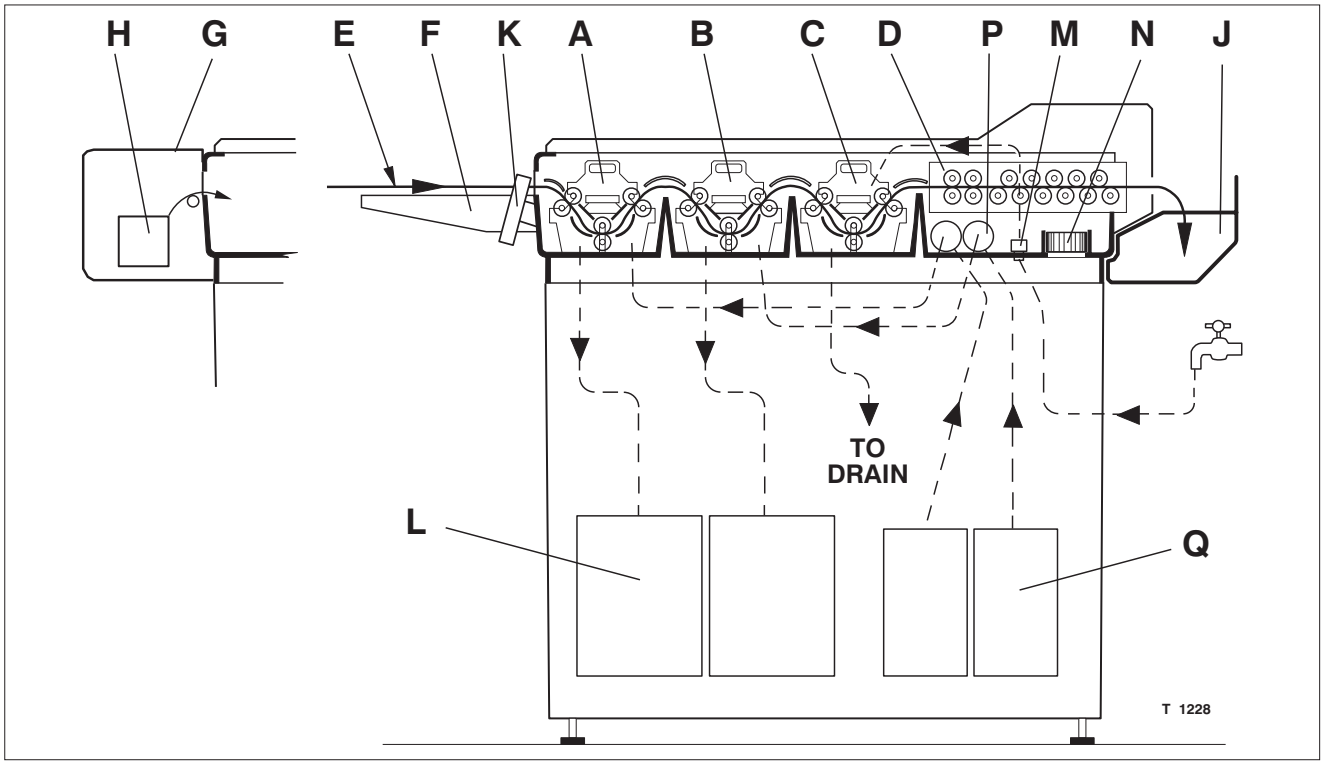
In the developer **(DEV)** section **(A)** the latent image created during exposure is developed and in the fixer **(FIX)** section **(B)** the developing process is stopped and unexposed silver halide is dissolved.
The DEV and FIX sections are identical, containing a processing tank with a heater and a thermostat to keep the temperature in range. A level detector circuit in each tank prevents operation of the processor with insufficient amount of chemicals.
In both sections a pump recirculates the solution to maintain a uniform temperature of the chemicals and both tanks overflow into waste chemical containers **(L)** through combined overflow and drain tubes.
A special lid covering the two tanks helps to reduce both condensation underneath the top cover and oxidation of chemicals.
The roller-configuration of the DEV- and FIX-racks are described in chapter 6 “CLEANING AND MAINTENANCE”.

WASH SECTION

In the wash section **(C)** residual chemicals are removed from the film material.
The flow of the wash water is controlled by a solenoid valve **(M)** and the water leaves the machine through the combined overflow and drain tube and into the drain.
The processor electronics is equipped with a programme that reduces the water consumption by 50% (see chapter 9, PAR 55).
Roller-configuration of the WASH-rack is described in chapter 6 “CLEANING AND MAINTENANCE”.

DRYER SECTION

In the dryer section **(D)** the moisture is removed from the film to allow for handling immidiately after processing. The dryer section consists of a centrifugal fan **(N)** with an integrated heater and two air distributing-boxes, one above and one underneath the dryer rack.
Roller-configuration of the DRYER-rack is described in chapter 6 “CLEANING AND MAINTENANCE”.



REPLENISHMENT SYSTEM

Two oscillating pumps **(P)** connected to two external replenishment tanks **(Q)** automatically add developer and fixer to the tanks to compensate for chemicals used during actual film processing.
The system also supplies additional developer to compensate for lost activity caused by normal oxidation.
It is possible to operate the replenishment pumps manually (to “top up” the tank levels) on the Control Box (see Chapter 4).
Film sensors at the entrance of the processor start the replenishment control circuit when film is entered.

ECOLOGICAL UNITS

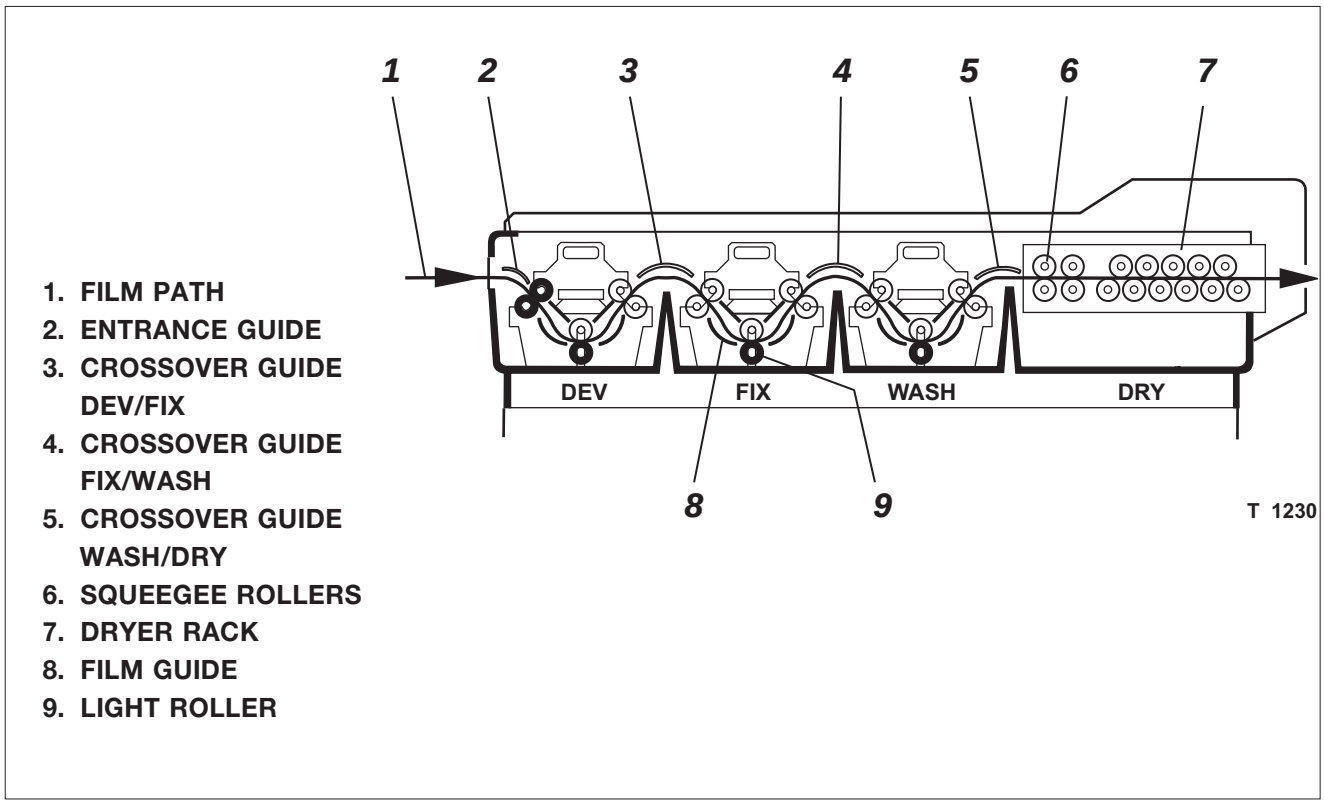
The processor is prepared for connections to ecological units for both DEV, FIX, and WASH.
Ask your local dealer for more information about the ecological units.

DEVELOPER FILTER

Some processors are equipped with a developer filter. Functional description of the developer filter is specified in a separate manual delivered with the processor.

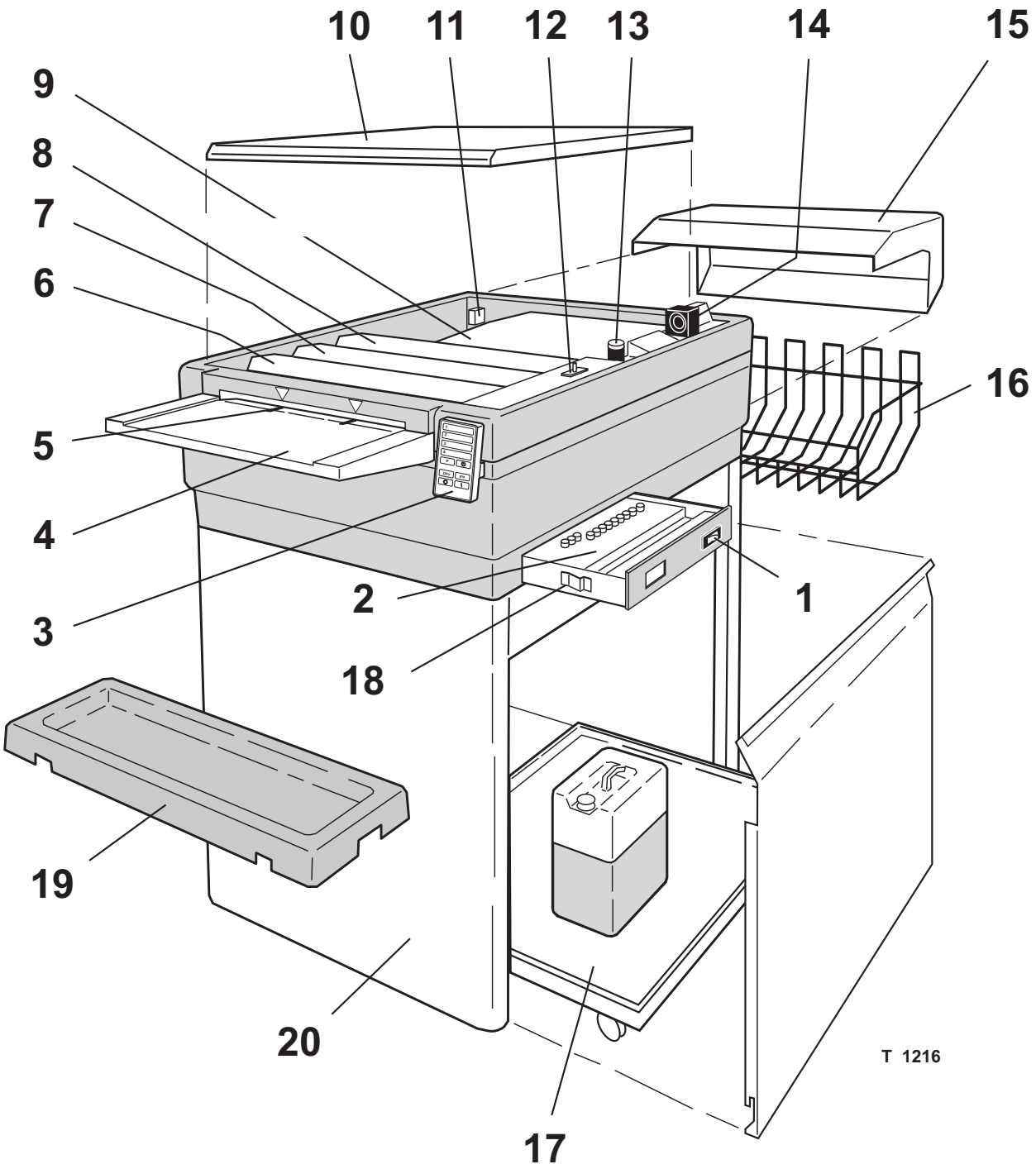
TRANSPORT SYSTEM

The transport system consists of a main drive-motor connected to a worm gear drive system. The drive system turns the rollers in each rack and the film guides and crossovers direct the film safely through the processor (see the figure below). In the wet sections the rollers of each rack are light, which allow the bottom rollers to float. This results in good contact on the film providing proper film transport.
Squeegee rollers at the entrance of the dryer section remove surface moisture from the film and divert water to the wash section.



1. **FILM PATH**
2. **ENTRANCE GUIDE**
3. **CROSSOVER GUIDE DEV/FIX**
4. **CROSSOVER GUIDE FIX/WASH**
5. **CROSSOVER GUIDE WASH/DRY**
6. **SQUEEGEE ROLLERS**
7. **DRYER RACK**
8. **FILM GUIDE**
9. **LIGHT ROLLER**

Fig. 3/1 Transport Systemv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MAIN COMPONENTS

(See illustration opposite)

MAIN SWITCH (1)
Switches the power to the machine ON/OFF.

ELECTRONICS DRAWER (2)
The electronics drawer (see description later in this chapter) holds the main control electronics and the fuses for all functions. The drawer is fitted with a cover inside to protect the electronics.

CONTROL BOX (3)
The processor is operated by the Control Box. (See description in Chapter 4).

FEED TABLE (4)
The photographic material is fed into the machine via the feed table (standard equipment) or a daylight cassette (option).
As shown in the figure opposite the cassette is equipped with a specially designed shelf that makes it easy to handle different sizes of imagesetter cassettes, all depending on how the shelf is placed in the cassette.

The largest cassette that fits into the daylight cassette is an APS Micro 5 cassette.
(See chapter 1 for daylight cassette dimensions).

INPUT SENSOR (5)
2 input sensors are placed at the processor entrance. They are marked with arrows above the film feed opening. When film is inserted, the input sensors automatically start the machine provided that the machine is switched on by the MAIN-switch **(1)** and the ON-button on the Control Box **(3)**.

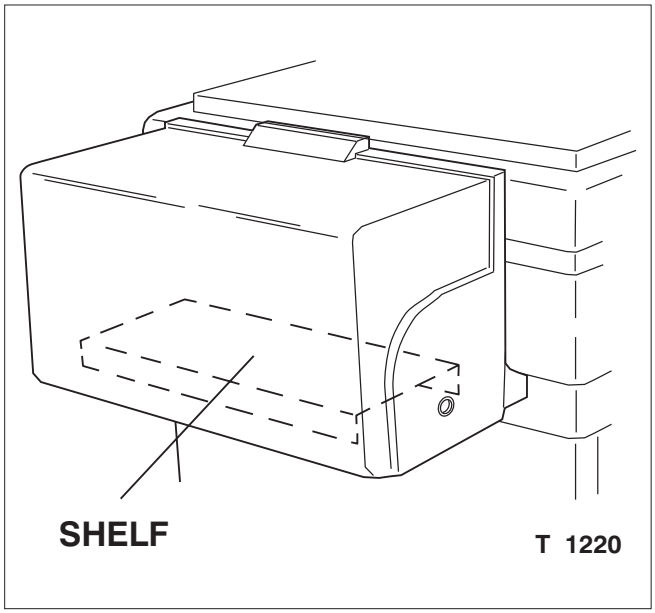


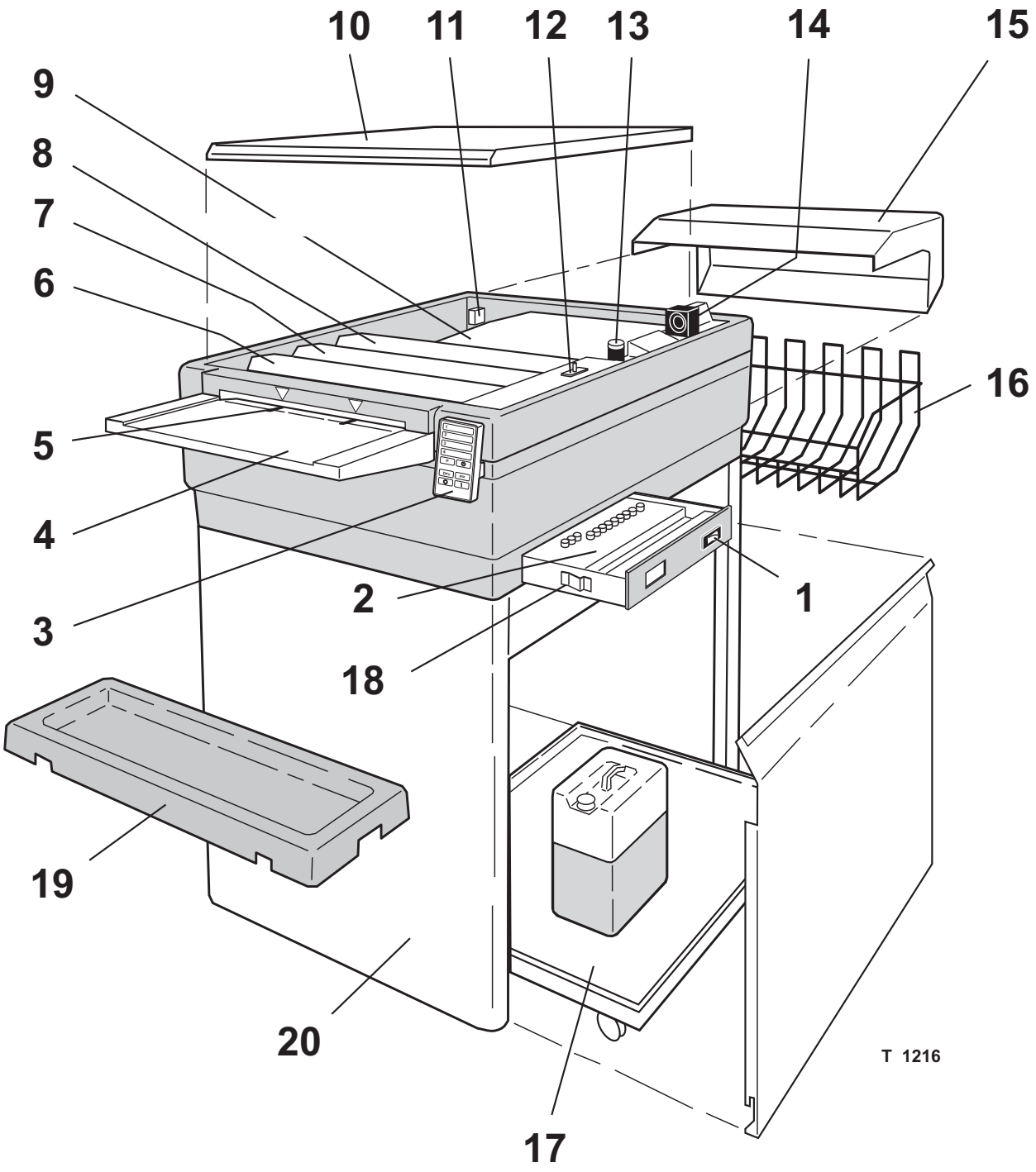
Fig. 3/2 Daylight Cassette

DEVELOPER RACK (6)
See description in chapter 3, “DEVELOPER SECTION”.
The developer rack is different from the fixer and wash racks regarding roller configuration and entrance-roller bearings (see chapter 6).

FIXER RACK (7)
See description in chapter 3, “FIXER SECTION”.
The fixer rack is identical to the wash rack.

WASH RACK (8)
See description in chapter 3, “WASH SECTION”.
The wash rack is identical to the fixer rack.

DRYER RACK (9)
See description in chapter 3, “DRYER SECTION”.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TOP COVER (10)

INTERLOCK SWITCHES (11) & (12)
The processor is equipped with 2 interlock switches. Switch **(11)** works with the dryer cover **(15)**, and switch **(12)** works with the top cover **(10)**. If either of the covers is removed from the machine, the related switch turns the machine off.

OVERFLOW/DRAIN TUBE (13)
Each bath is equipped with an overflow and drain tube. In the developer and fixer sections the tubes are placed underneath the top cover **(10)** in the lefthand side, whereas the tube in the wash section is placed through the top cover in the righthand side of the processor.
To empty a section, turn the drain-tube 90° counter-clockwise.
The figure below shows the wash-tank drain-tube in open and closed position.

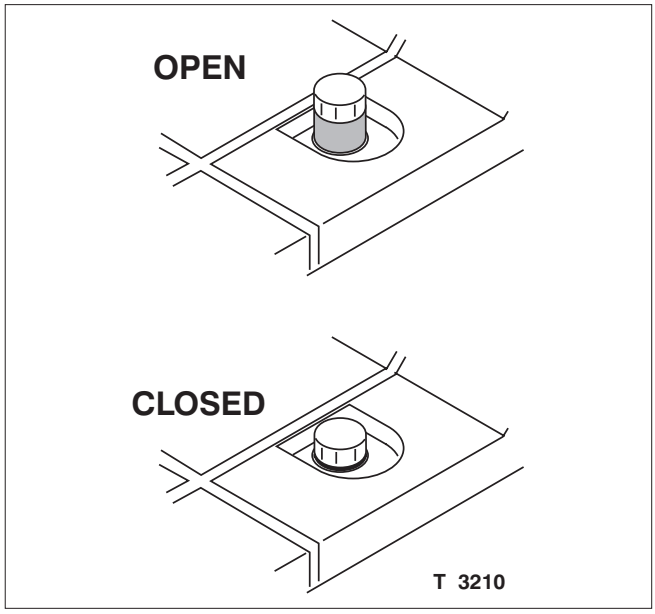


Fig. 3/3 Drain tube, Wash section

SCAVENGER FAN (14)
Removes chemical vapours from inside the processor.
See also description in chapter 2, “EXHAUST INSTALLATION”.

DRYER COVER (15)

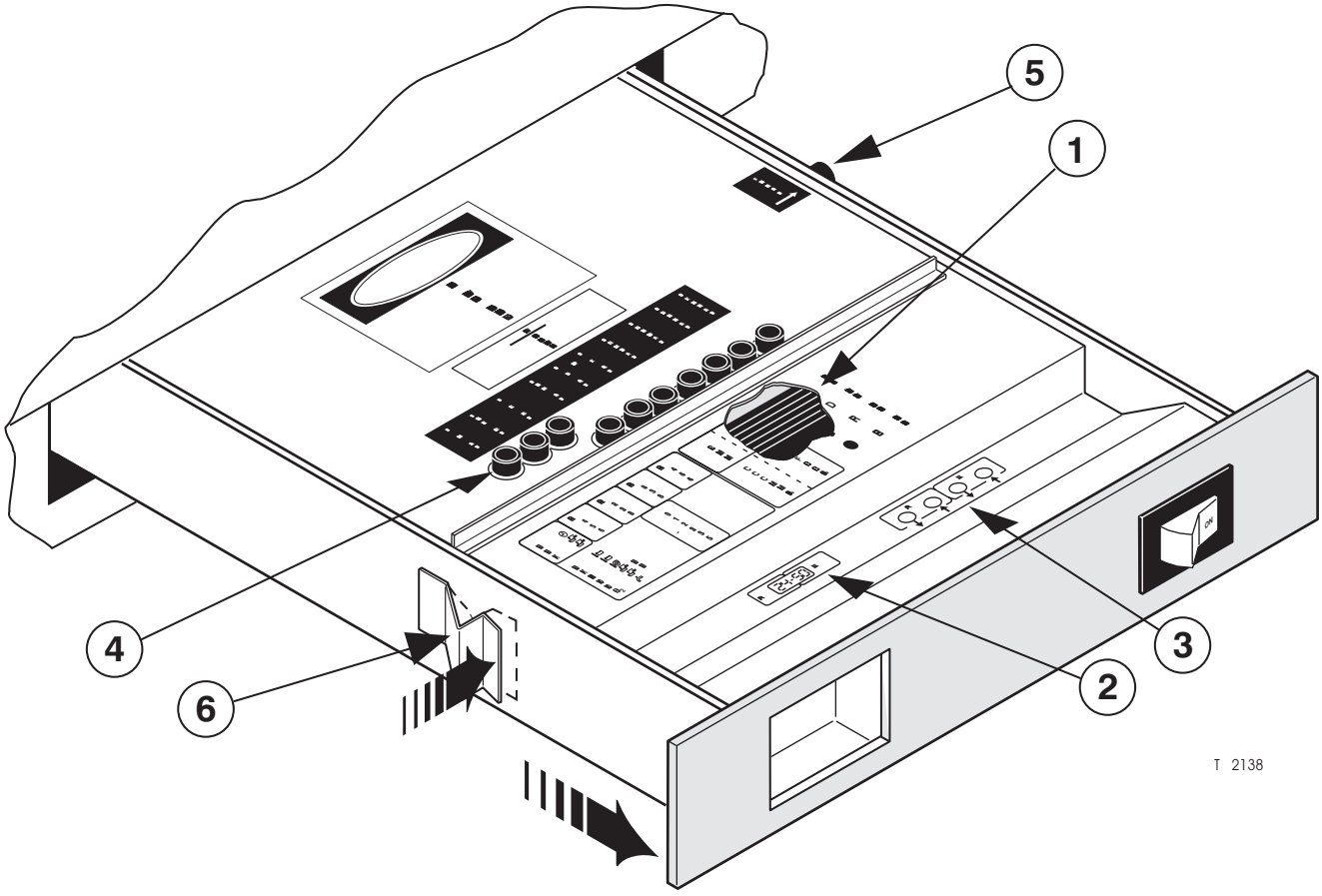
FILM BASKET (16)
When the film leaves the machine it lands in the film basket. The basket can hold approx. 6 m (20 ft.) of film.

TROLLEY (17) (OPTION)
A trolley makes it easy to handle replenishment containers and/or containers for waste chemicals when changing, emptying, refilling etc.

LOCK, ELECTRICAL DRAWER (18)
The lock prevents that the electronics drawer is pulled out more than necessary. When pressed the lock is released and the drawer can pull all the way out (seealso description later in this chapter). This enables you to replace a blown fuse or relay etc. if necessary.

DRIP TRAY (19)
When a rack is removed from the processor for cleaning etc. it can be placed on the drip tray and carried away without spilling of chemicals.

STAND (20)
The processor is delivered with an open stand or a closed stand.
Inside the stand there is room for the replenishment containers on the trolley **(17)**.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ELECTRONIC CONTROL

MAINBOARD PCB GCB

The processor is electronically controlled by the Mainboard PCB **GCB** placed in the electronics drawer (see illustration opposite) underneath a cover. The PCB holds all the controls, the adjustment potentiometers for the thermostates and the replenish pumps as well as the max. and min. speed potentiometers for the motor control. Furthermore the PCB is fitted with two cooling fin brackets where some triac relays **(1)** are located. The triac relays control the high voltage output. Another small relay issue low voltage to the electronics when the ON-button is activated. Also the fuses for heaters, pumps etc. are placed on the PCB.
The PCB also communicates with the Control Box (see Chapter 4).
The PCB has a display **(2)** and two set of buttons **(3)** for making adjustments. The procedure of making adjustments on the PCB GCB is described in chapter 4.

The PCB **GCB** comprises the following circuits:

- 1 Powersupply for the electronics.
- 3 Low level detectors.
- 1 Heater thermostat for the developer.
- 1 Heater thermostat for the dryer.
- 1 Heater thermostat for the fixer.
- 1 Motor speed control for the main motor.
- 1 Power supply for the main motor control.
- 2 Replenishment circuits.
  One for DEV and one for FIX.
- 2 Oxidation replenishment circuits.
  One for DEV and one for FIX.
- 2 Input detector circuits.
- 1 Timing circuit for the start and stop of process-time.

FUSES

CAUTION! Disconnect all power to the machine before changing a fuse.

All fuses for the heaters, pumps and motors etc. are placed on the PCB **GCB**, except for the dryer heater fuse **F1**. This fuse **(5)** is placed through the right side panel of the drawer.
See list of fuses in “FUSES” later in this chapter.

DRAWER LOCK

The electronics drawer is fitted with a special lock **(6)**. Under normal operating conditions the electrical drawer can only be pulled out partially.
If it becomes necessary to change a fuse, push the lock and so the drawer can be pulled all the way out.

CAUTION! Never leave the drawer open. This is to protect the electronics from chemicals, if spilled.

INLINE GFCI RELAY

Some US models are equipped with a GFCI box (Ground Fault Circuit Interrupter). The GFCI box is mounted on the power supply cable.

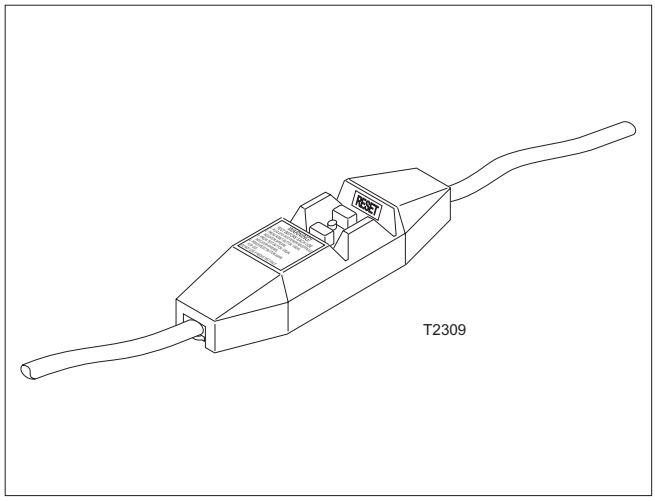


Fig. 3/4

STAND-BY MODE

This manual will often refer to stand-by mode of the processor. This is when the processor is started as described in chapter 5, “DAILY START-UP” and when no program has been activated.

In **stand-by** mode

- The transport mechanism operates at min. speed (see chapter 1) in order to avoid crystallization of chemicals on rollers and guides.
- The wash water solenoid valve is closed.
- The dryer section works to keep the temperature within a fixed range (See chapter 9, PAR 12 and 13).

The processor automatically goes into **stand-by** mode 15-30 seconds after the film has left the dryer section when in **Automatic** mode (see “PROCESSING MODES”).

PROCESSING MODES

The processor operates in one of two modes: **Automatic** or **Continuous**.

From the factory the processor is set to **Automatic** mode.
(To switch from **Automatic** mode to **Continuous**, the value for parameter 07 must be changed from 00 to 01, see chapter 9)

In **Automatic** mode, when film is fed, the input sensors start the machine and

- The transport mechanism resumes the operating speed specified in the selected program.
- The wash water solenoid valve opens to let in water.
- The dryer heater element is controlled by the dryer temperature control.
- When the film has left the dryer section, the machine returns to **stand-by** operation after 15-30 sec.
  (Time depends on film speed).

In **Continuous** mode the processor functions exactly as in **Automatic** mode, except that it never enters the **stand-by**t mode.

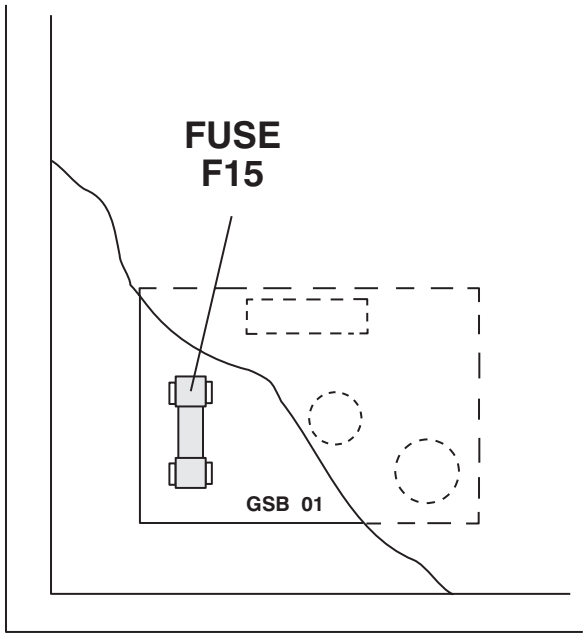
FUSES

The fuses below are located in the electronics drawer.

Fuse	Fuse for...	Type/Dimension	Part No.
	Heater, dryer section	10A, 6.3 x 32 mm, fast	16079
	Heater, fixer bath	5A, 6.3 x 32 mm, fast	5534
	Heater, developer bath	5A, 6.3 x 32 mm, fast	5534
	Blowers, dryer section	1A, 6.3 x 32 mm, fast	5671
	Circulations punp	1A, 6.3 x 32 mm, fast	5671
	Replenishment pump, FIX	0,5A, 6.3 x 32 mm, fast	16076
	Replenishment punp, DEV	0,5A, 6.3 x 32 mm, fast	16076
	Transformer. Low voltage power supply for the control electronics	0,8A, 6.3 x 32 mm, slow	16340
	18 V AC supply for the control electronics	1,5A, 6.3 x 32 mm, slow	16029
	24 V AC for level detectors	0,25A, 6.3 x 32 mm, fast	16075
	Power supply for the main motor speed control.	3A, 6.3 x 32 mm, slow	16014

FUSE FOR EXHAUST FAN

The fuse **F15** for the exhaust fan is placed on the rectifier board PCB GSB 01 in the front left corner of the electronics drawer underneath the cover.
(see the figure opposite).
Fuse 0.5A, 5 x 20 mm **Part no. 16884**



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ELECTRICAL DIAGRAM

The electrical diagram for the processor is behind the appendices.

4. OPERATORES CONTROLS AND INDICATORS

THE CONTROL BOX

GENERAL

The operation of the processor is handled by the Control Box (See figure below). The Control Box is fitted to the right of the feed table/cassette cover of the processor and is connected to the electronics in the drawer.

DIMENSIONS

The Control Box has the dimensions
110 x 55 x 15 mm (4.3"x2.2"x0.6").

FEATURES

The Control Box has the following features:

- ON-button.
- OFF-button.
- Buttons for manual operation of the DEV/FIX replenishment pumps.
- Indicator for LOW LEVEL/REPLENISHMENT.
- Indicator for “WAIT”.
- Selection of 4 different programs (different dev. times and replenishment rates).
- Indicator for selected program.

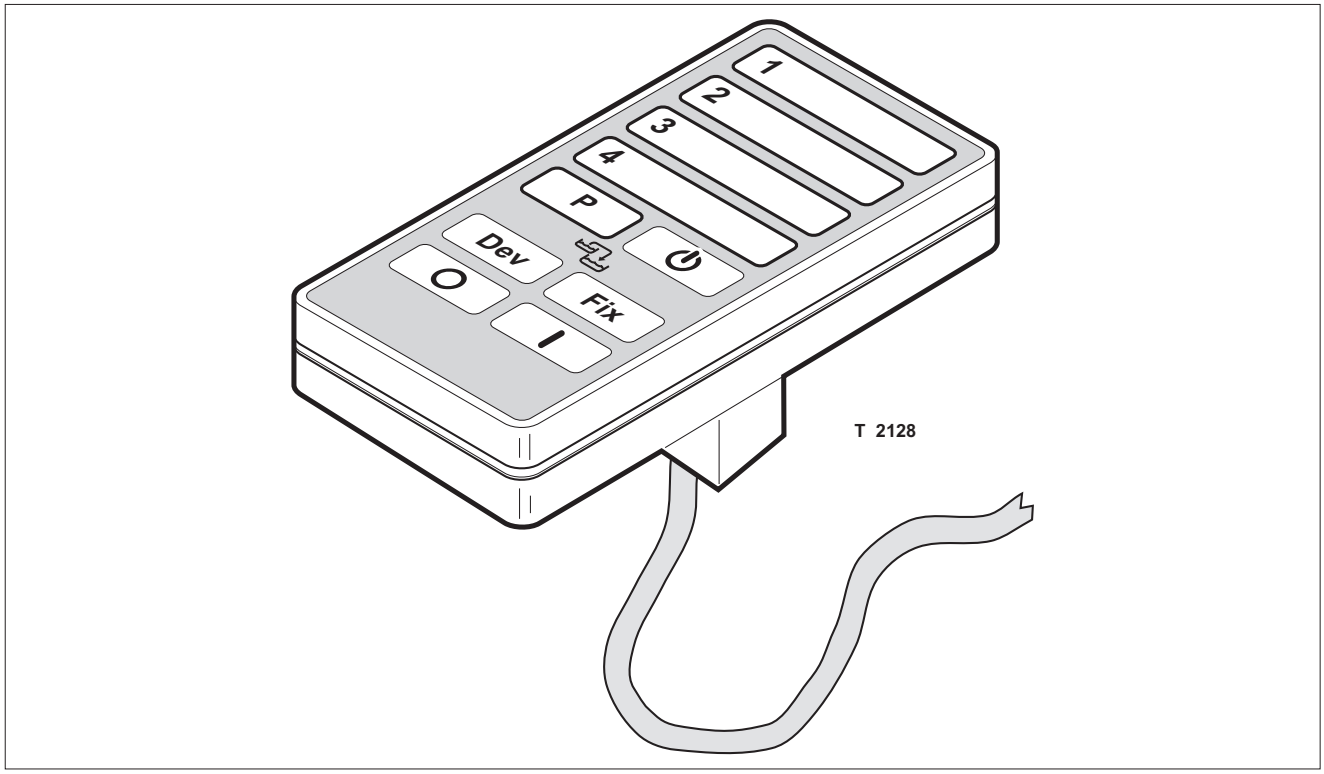
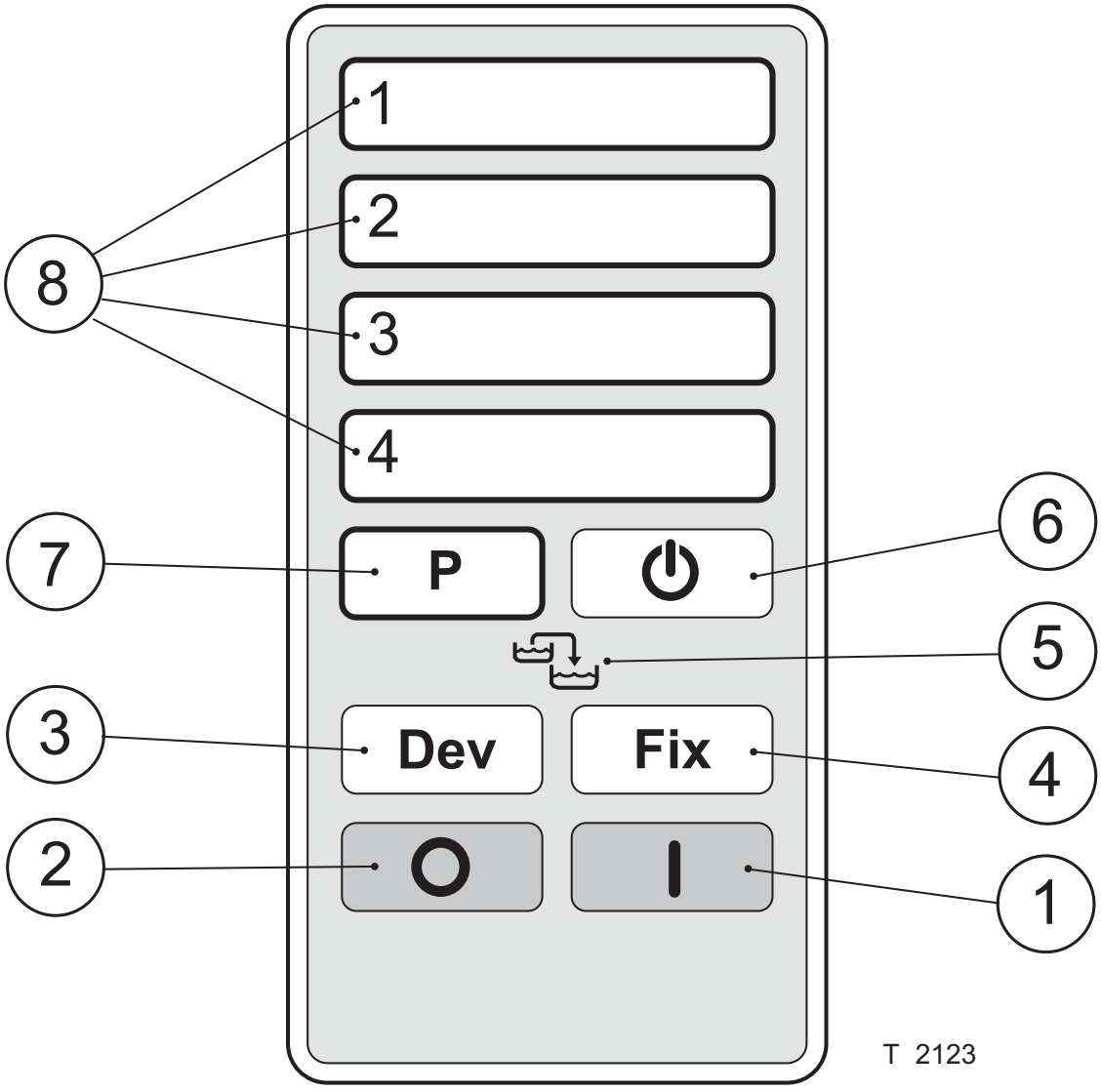


Fig.4/1 Control Box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FUNCTIONAL DESCRIPTION

ON-BUTTON (1)
Starts the machine provided the MAIN-switch is set to “ON”(I). The built-in lamp flashes when only the MAIN-switch is set to ON. When also the ON-button has been pushed, the lamp is lit constantly.
If the ON-button is pushed immediately after the machine is turned on by the MAIN-switch, it takes approx. 10 seconds before the machine starts.

OFF-BUTTON (2)
This button switches the machine to off. At this stage only the time-replenishment circuits and the exhaust fan work (lamp in ON-button flashes).

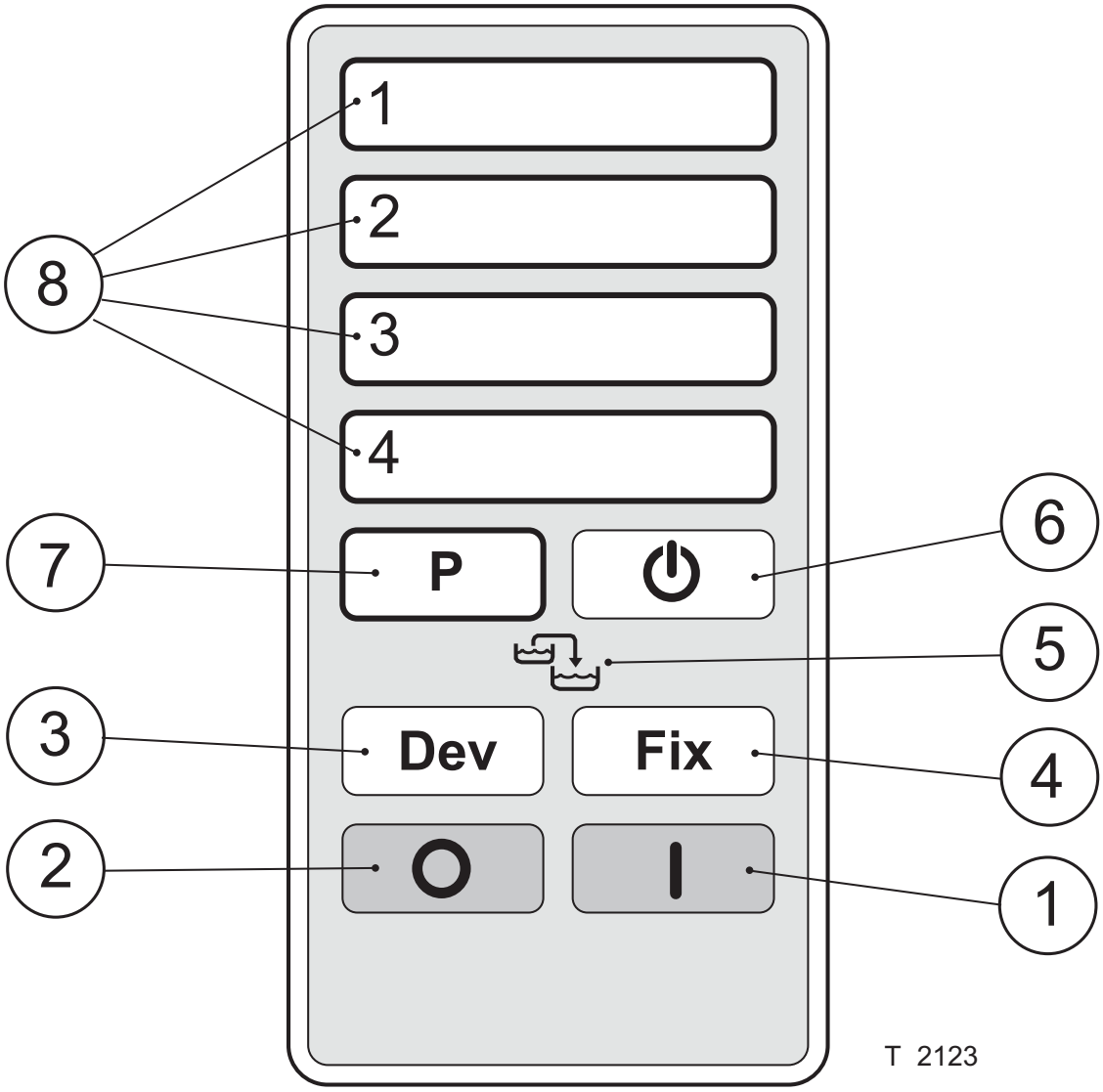
DEV/FIX BUTTONS (3) & (4)
The buttons activate the corresponding replenishment pumps. They can be used to top up the tanks manually.
If low level is detected in the DEV or FIX section, the WAIT-lamp **(6)** is lit and the LOW LEVEL/REPLENISHMENT-lamp **(5)** flashes.
In this case push one or both of the REPLENISHMENT-buttons. The electronics automatically detects the bath with low level and the corresponding pump starts to reestablish the correct level.
In case of low level in the WASH bath, check that the external water supply valve and the solenoid valve is open and that the drain tube is closed (see chapter 3).

NOTE! When the tanks are empty and have to be filled, do this from suitable containers, as it is quite time-consuming to fill the whole tank using the pumps.

LOW LEVEL/REPLENISHMENT LAMP (5)
If low level is detected in the DEV or FIX section this lamp flashes. In this case the WAIT-lamp **(6)** is also lit. When one or both of the replenishment pumps run to reestablish the correct level, the lamp is lit constantly and it turns off when the correct level is reached.
If the correct level has not been reestablished within 20 minutes the pump stops and the lamp starts to flash again.
See also explanation for item **(3)** and **(4).**

WAIT-LAMP (6)
This lamp is lit if any of the following situations occur:

- If one or both film feed sensors are activated.
- If low level is detected in either DEV or FIX bath. In this case also the LOW LEVEL/REPLENISHMENT-lamp **(5)** flashes.
- If film is jammed. At the same time also the PROGRAM INDICATOR LAMPS **(8)** will flash in succession.
- The WAIT-lamp **flashes** if the temperature in the DEV section deviates with more than **1.5°C (2.7°F)** from the preset value or if temperature in FIX section is more than **X°C** lower than the preset value (the X-value is adjustable - see chapter 9, PAR 51).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PROGRAM SELECTION BUTTON (7)

The electronics facilitates programming of 4 different programs with different developing times and DEV and FIX replenishment rates. The built-in lamp is lit when the machine is switched on by the ON-button **(1)**. By pressing the PROGRAM SELECTION-button the suitable program (1, 2, 3 or 4) for the present job can be selected and the matching lamp **(8)** is lit.
If the operator attempts to change processing program within the first half of the running program the indicator lamps for all 4 programs will flash twice to indicate that a change of program is not possible.

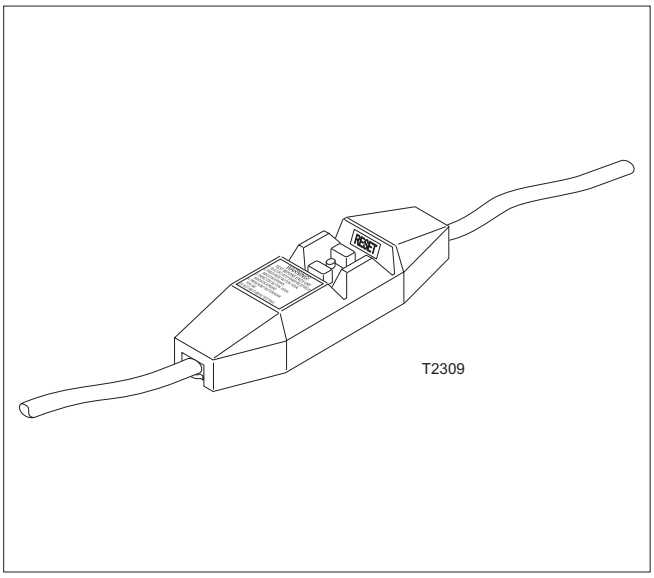
PROGRAM INDICATOR LAMPS (8)

See explanation for PROGRAM SELECTION-button **(7)**. When the machine is turned on by the ON-button **(1)** the lamp for the latest employed program will be lit.
The values for the different programs can be written on the panel to the right of the indicator lamps using a spirit marker.

NOTE! The PROGRAM INDICATOR LAMPS (8) will flash in succession if a film is jammed in the processor. At the same time also the WAIT-lamp is lit.

THE GFCI BOX

See chapter 5 “OPERATING PROCEDURES” for detailed description of the GFCI relay buttons.

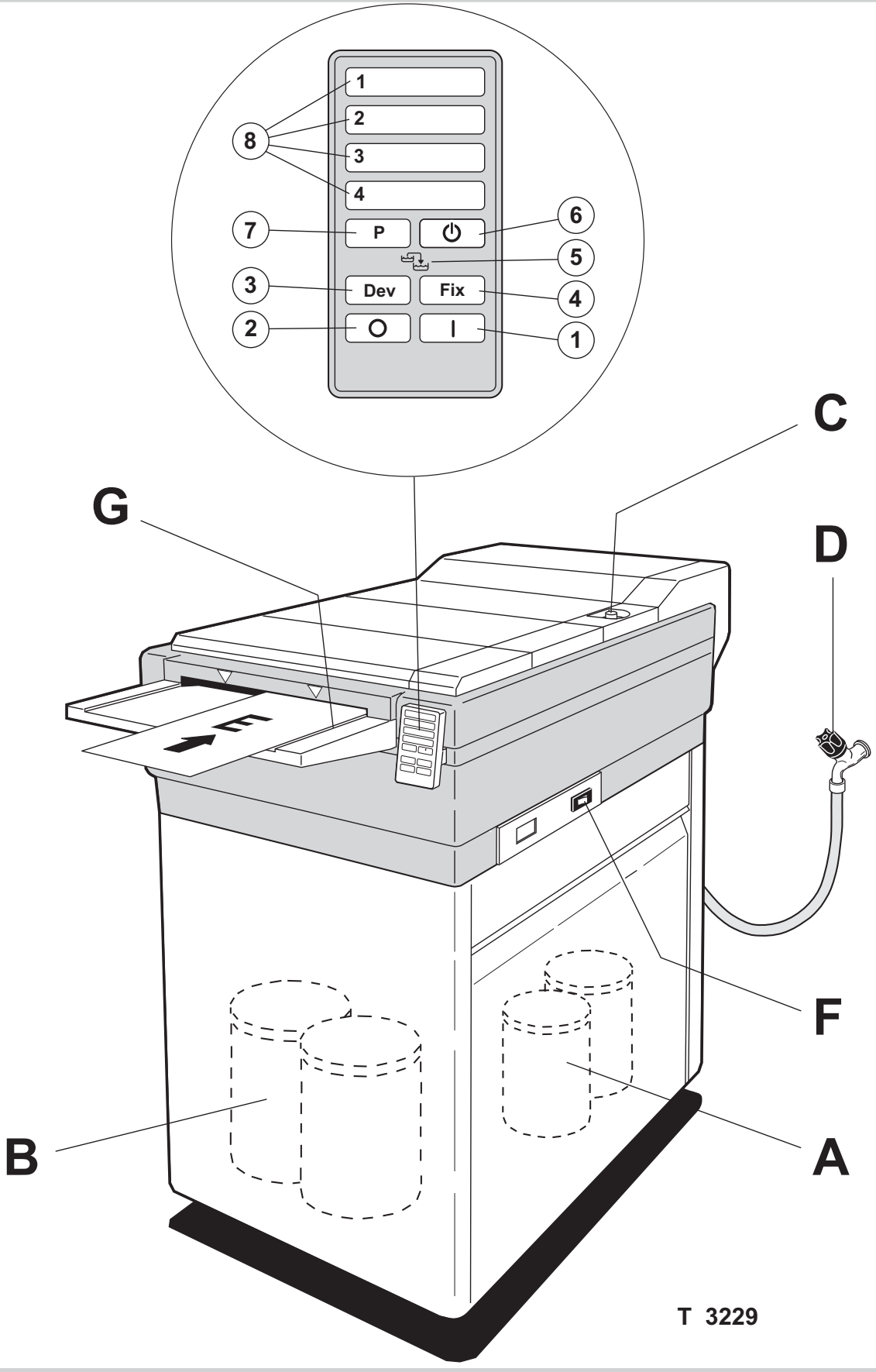


5. OPERATING PROCEDURES

GENERAL

After the installation is finished, (see chapter 2 “INSTALLATION”), the initial start-up procedure can be carried out.

Turn power off before commencing with the start-up procedure.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INITIAL START-UP

(See illustration opposite).

- Remove top cover, condensation lid and dryer cover.
- Remove the racks (see chapter 6) and inspect all rollers and film guides for impurities etc.
- Open all tank drain-tubes by turning them 90° counterclockwise. The drain-tubes for the DEV and FIX baths are at the lefthand side of the tank and the drain-tube for the WASH tank **(C)** is at the righthand side.
- Vacuum-clean all tanks if required.
- Carefully rinse all tanks, rollers and film guides with water (use a hose) to get all impurities out of the tanks.
- Let the tanks run dry, then close the drain-tubes.
- Fill the replenishment containers **(A)** (not standard delivery) and make sure that the hoses are installed correctly:
  See APPENDIX A.
- Fill the developer and fixer tanks **(fixer first)** with ready made solution. The tanks are correctly filled (without the racks in) when the level is as shown in the figure below. Be careful not to get fixer into the developer tank and opposite.

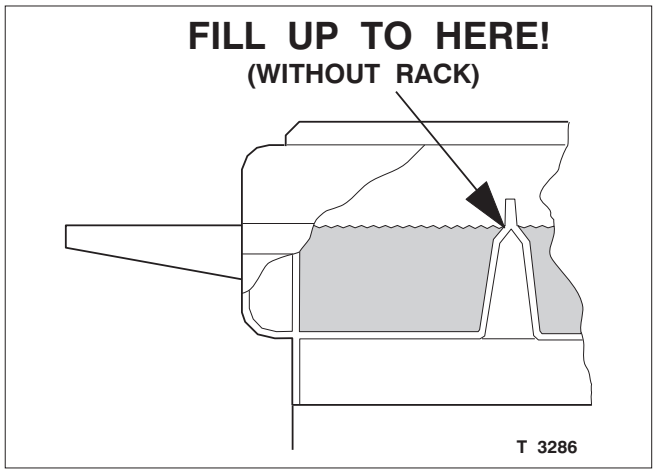
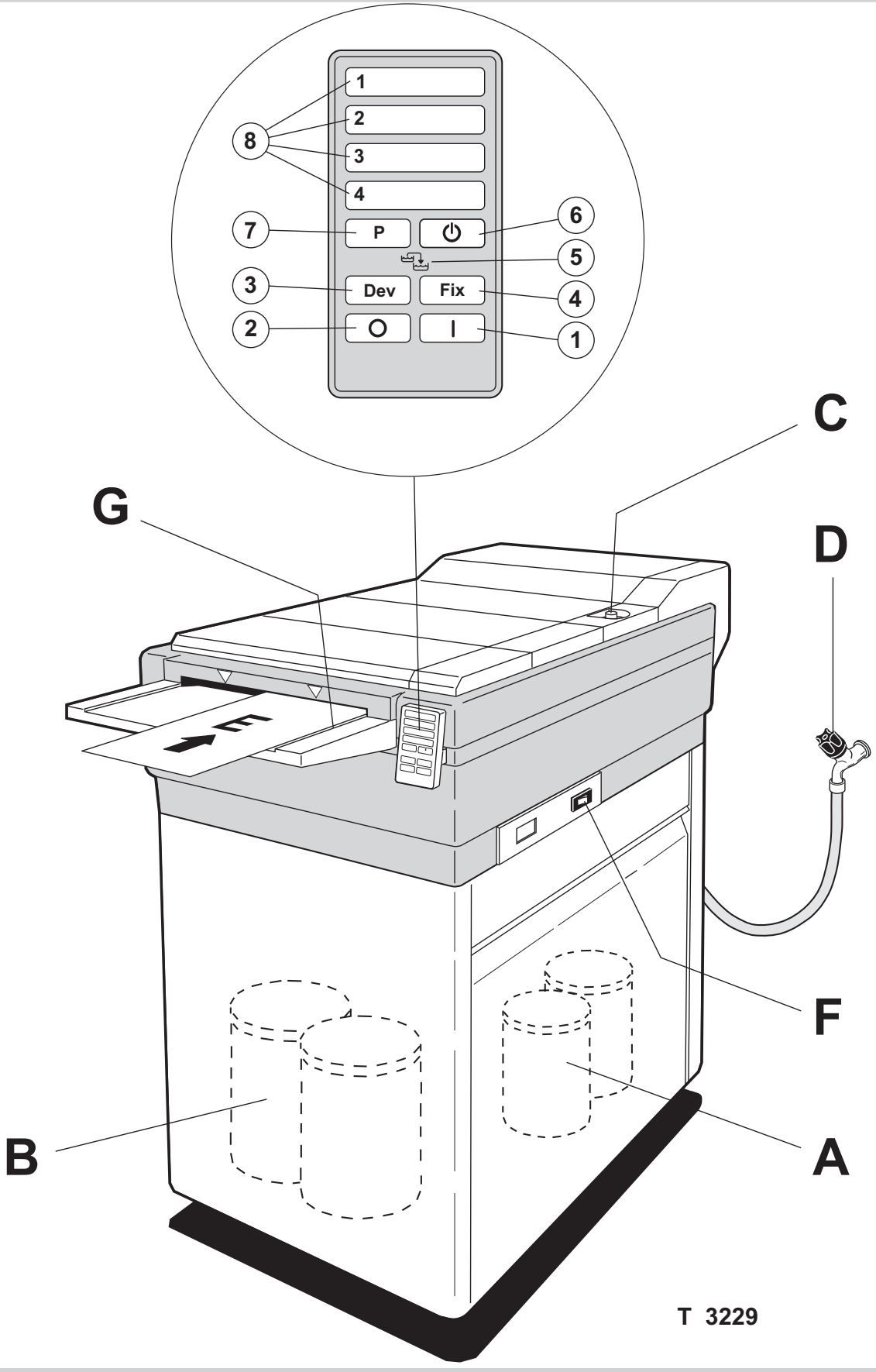


Fig. 5/1

- Reinstall the racks (see chapter 6). Be sure to insert each rack in the correct bath. Lower the racks carefully to avoid that fixer gets into the developer tank and opposite.
- Reinstall the condensation lid and put the top cover and dryer cover on the machine. Make sure that the covers are placed correctly in order to activate the interlock switches. Otherwise you will not be able to start the processor.
- Insert power plug into wall socket.
- Open external water supply valve **(D)**.
- Turn the MAIN-switch **(F)** to ON, or
  US models with GFCI relay:
  Turn the MAIN SWITCH **(F)** on and actiavate the RESET button on the GFCI relay. The red indicator on the GFCI relay will light up.
- Push the ON-button **(1)**. The indicator lamp **(8)** for the latest employed program will be lit.
  If the ON-button is pushed immediately after the machine is turned on by the MAIN-switch, it takes approx. 10 seconds before the machine starts.
- The solenoid valve opens to fill the wash tank with water.
- If the WAIT-lamp **(6)** flashes, the developer or fixer have not yet reached the correct temperature. Wait until this lamp turns off. Normal warm-up time will be approx. 30 minutes.
- Run some sheets of film through the machine to clear the rollers of impurities.
- The machine is now ready for processing.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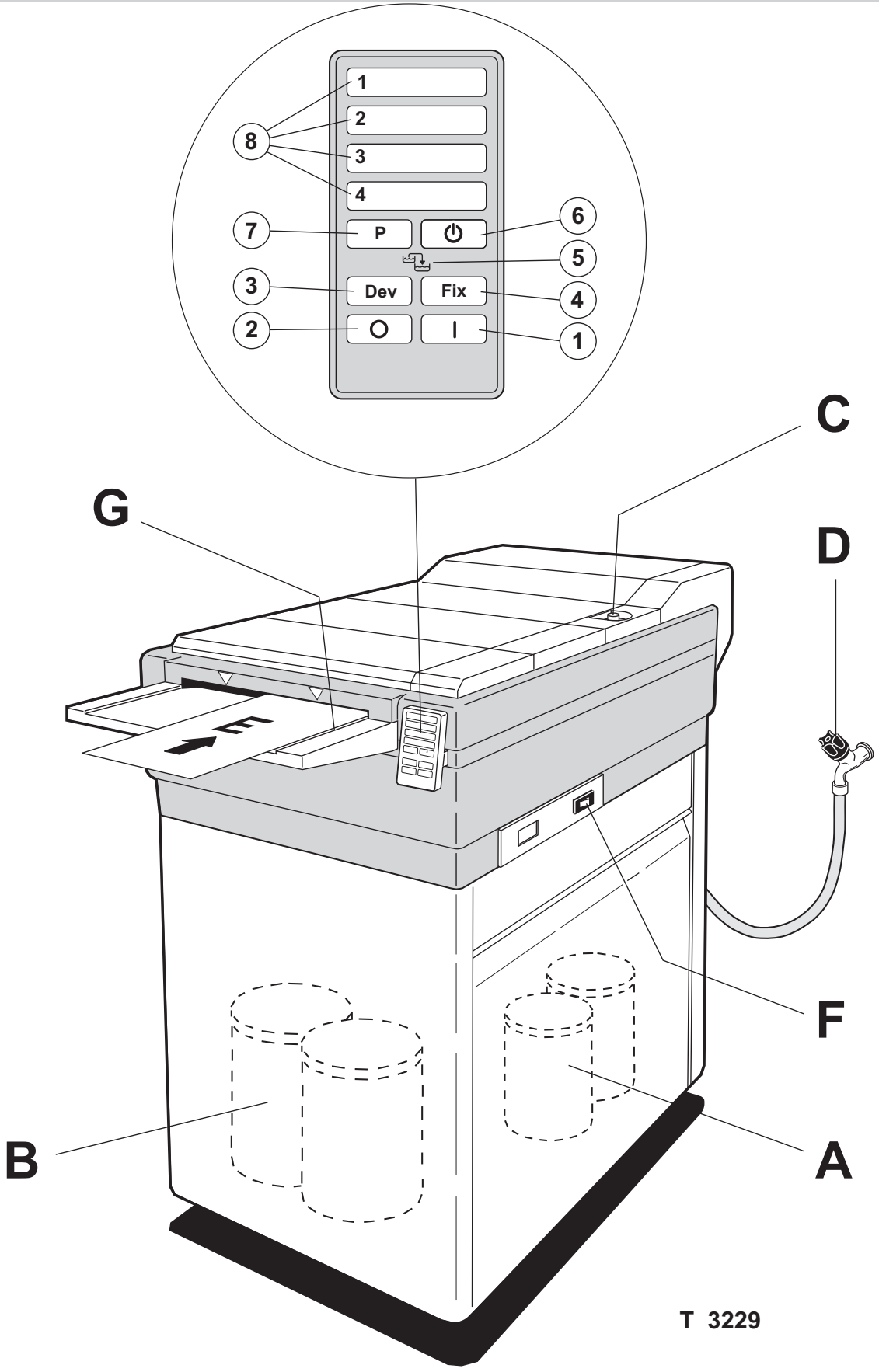
PROCESSING PROGRAMS

The electronics holds 4 programs (1, 2, 3 and 4) in which you can set 4 different developing speeds and replenishment rates for different types of processing jobs.
The program values are set in PAR 14, 15, 16, 24, 25, 26, 34, 35, 36, 44, 45 and 46 as described in “MAKING ADJUSTMENTS” later in this chapter and in chapter 9.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GFCI RELAY

NOTE! Some US models only.

USING THE GFCI RELAY

The processor should be started as described in daily start-up. In “power off” situations the GFCI (see fig.) must be opearated as follows:

POWER SUPPLY DISCONNECTED AT WALL SOCKET

- Switch main power supply on.
- Press the RESET button **(1)**.
- Switch the main switch **(F)** on.

CAUTION! Always activate the RESET button (1) each time the main power supply is switched on.

CAUTION! Never use the TEST button (2) on the GFCI relay as power-off switch.

CURRENT LEAKAGE

- GFCI relay will switch power off.
- Press the RESET button **(1)**.
- GFCI relay will reconnect power to the processor.

CAUTION! If GFCI relay do not reconnect power to the processor call service technician.

TEST BUTTON (2)

The TEST button **(2)** is for testing reliability of the GFCI relay. Make a test approx. once a year:

- Press the test button **(2).** The GFCI relay cut power off.

CAUTION! If GFCI relay do not cut power off the GFCI relay must be changed. Call service technician.

- If test of GFCI has been successful press RESET button **(1)**. The GFCI relay will reconnect power to the processor.

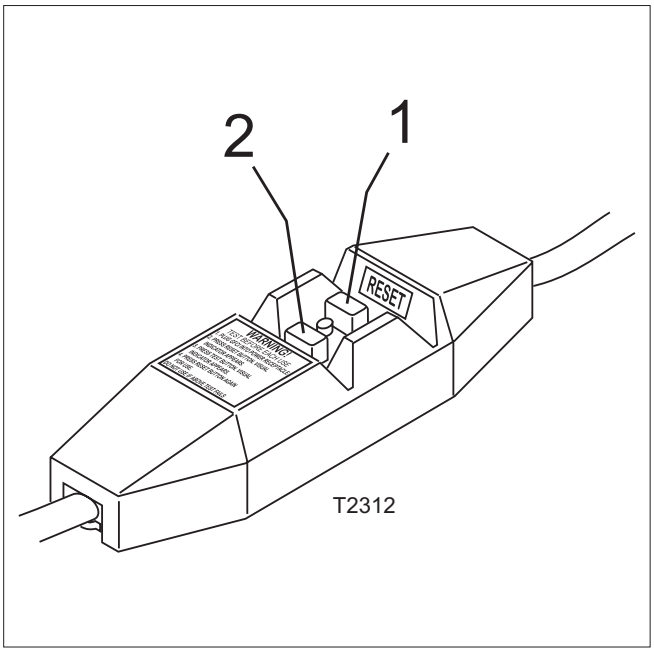
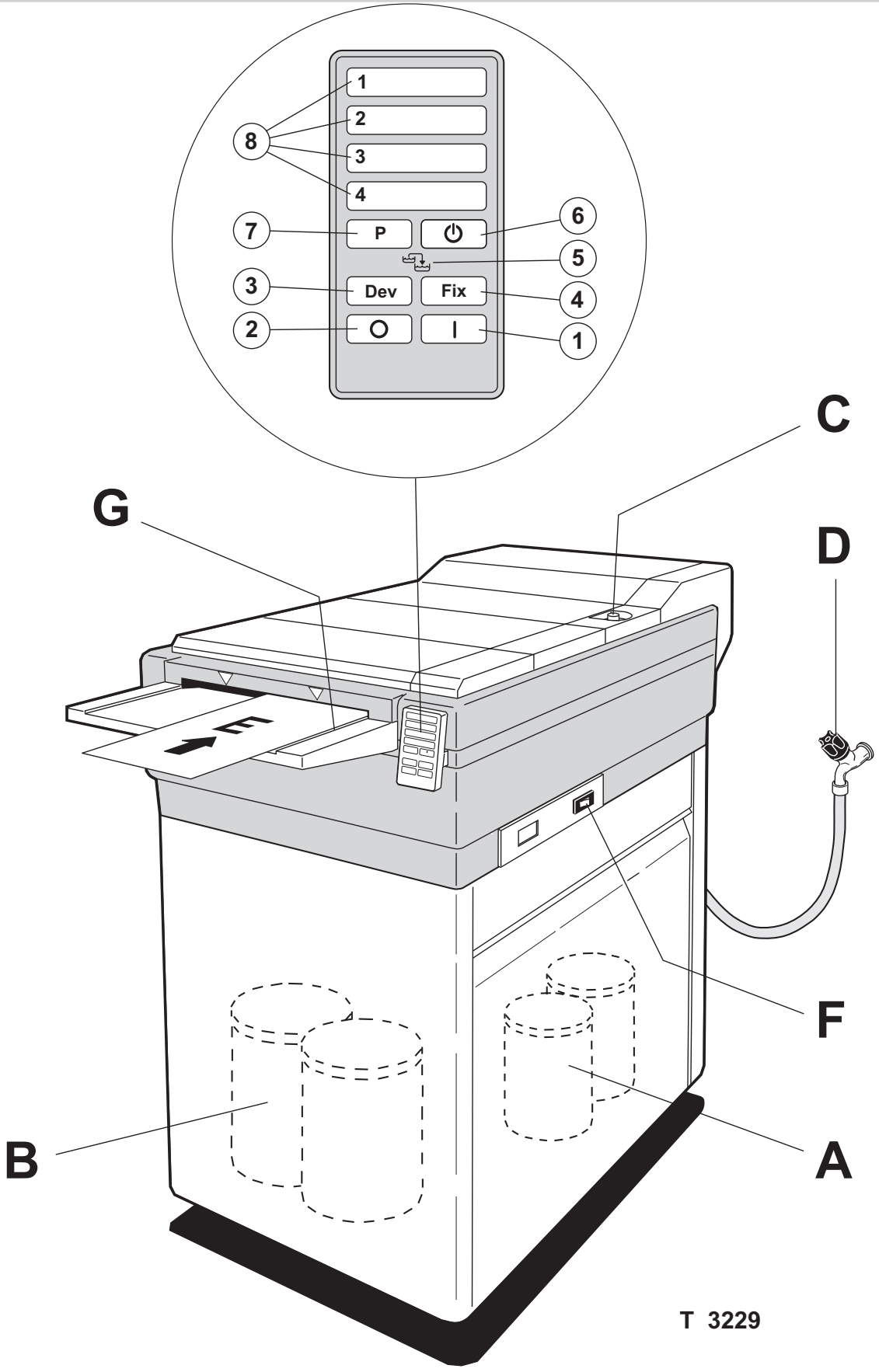


Fig. 5/2 Inline GFCI relay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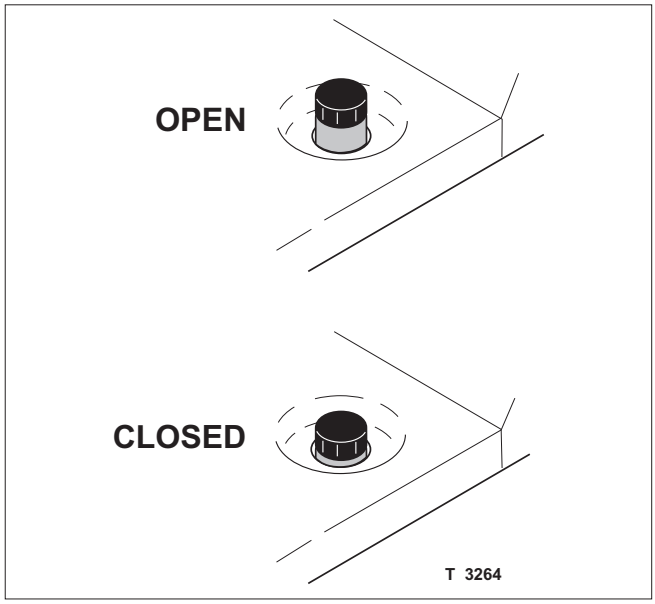
DAILY START-UP

(See illustration opposite)

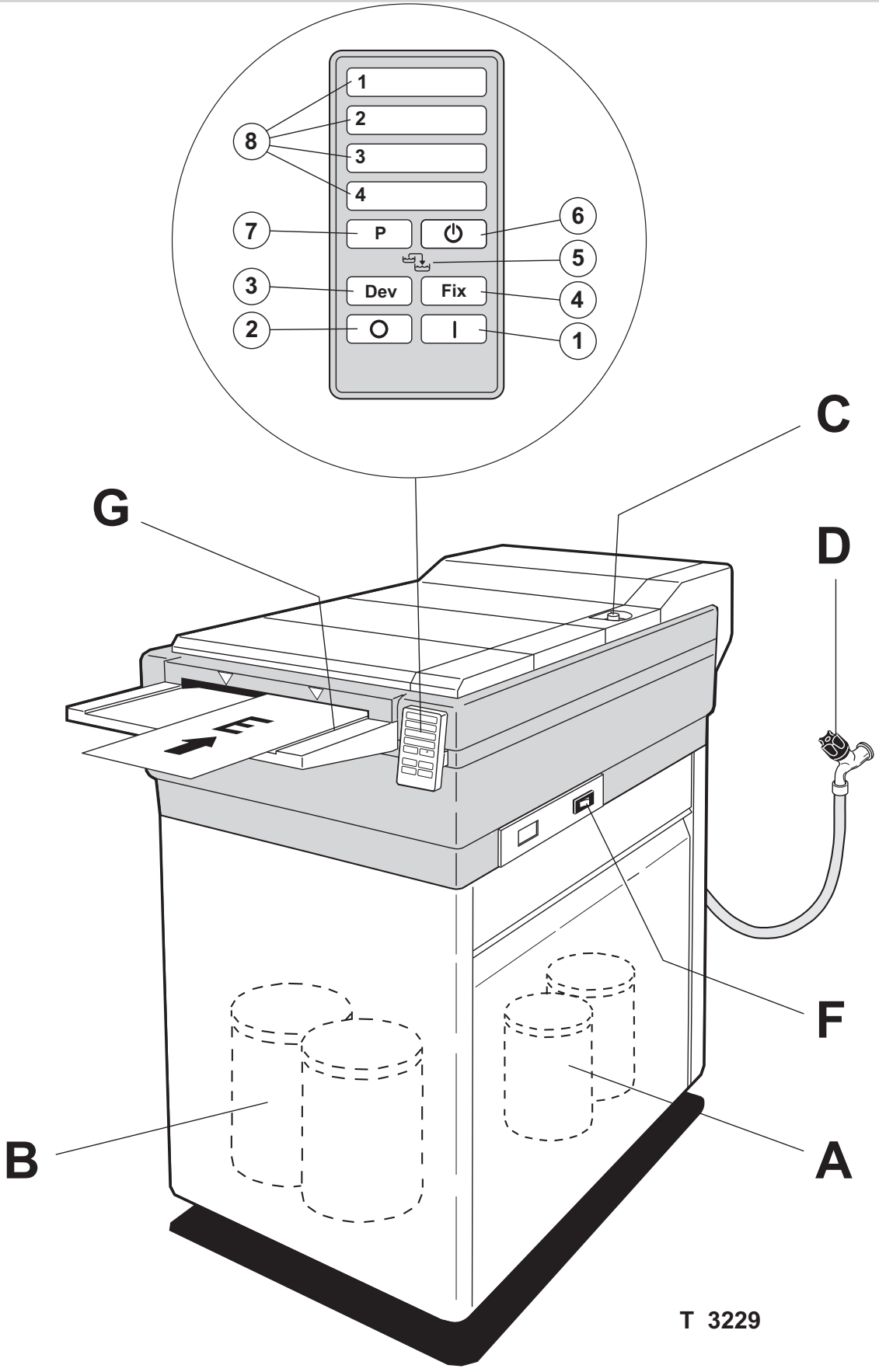
- Check that the replenishment containers **(A)** are sufficiently filled and that the containers for waste chemicals **(B)** are empty.
- Remove the top cover and condensation lid and check the level in the developer and fixer baths. Add chemicals if required.

NOTE! Make certain that the wash-tank drain-tube (C) is closed. Do not operate the processor with an empty wash tank.

- Before starting the machine, wipe clean all top rollers and crossover guides. Put covers back on the machine.
- Open external water supply valve **(D)**.
- Turn MAIN-switch **(F)** to ON, or
  US models with GFCI relay:
  Turn MAIN-switch (**F)** on and activate the RESET button on the GFCI relay.
  The exhaust blower will start, and the replenishment pumps may also run for a few moments.



- Push the ON-button **(1)** and verify that the built-in lamp is lit.
  If the ON-button is pushed immediately after the machine is turned on by the MAIN-switch, it takes approx. 10 seconds before the machine starts.
- The solenoid valve opens to fill the wash tank with water.
- From the factory the processor is set to **Automatic** mode. If you want to process in **Continuous** mode, please refer to chapter 9.
- Press the PROGRAM SELECTION-button **(7)** until the lamp **(8)** for the desired program is lit.
- If WAIT-lamp **(6)** is lit and the REPLENISHMENT-lamp **(5)** flashes, low level is detected in either DEV or FIX section. Press the REPLENISHMENT-buttons **(3)** and **(4)**. The electronics automatically detects the bath with low level and the respective pump starts to “top up” the level in the section. While the pump runs the REPLENISHMENT-lamp **(5)** is lit constantly. Wait until the lamps turn off.
  If the pump runs for 20 minutes and the level is still not correct the pump stops and the REPLENISHMENT-lamp **(5)** starts to flash again. In case of low level in wash tank, check that solenoid valve is open and that drain tube **(C)** is closed.
- If the WAIT-lamp **(6)** flashes, the temperature in the DEV or FIX section (or both) is too low. Wait until the lamp turns off.
  Normal operation conditions are reached after app. 30 minutes.
- Feed some sheets of film through the machine to clean it.
- Your machine is now ready for processing.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T 3229

PROCESSING FROM THE FEED TABLE

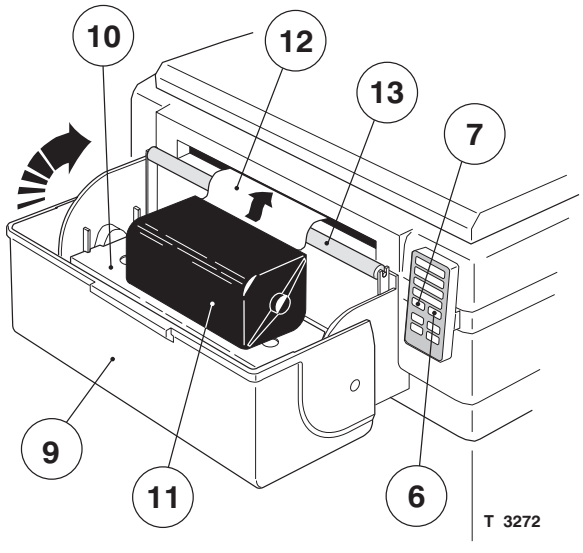
(See illustration opposite).

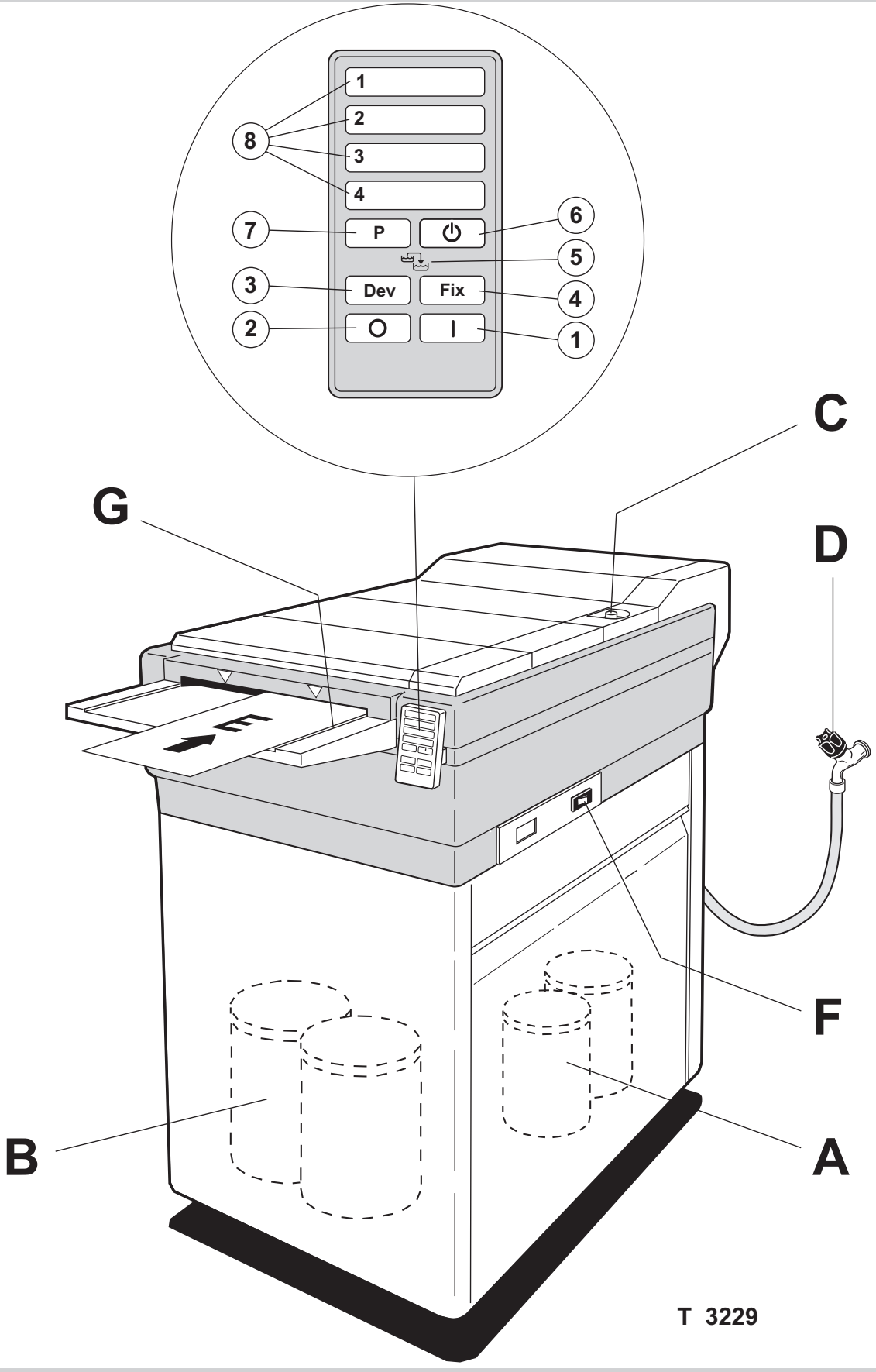
- Check the film/paper curl (see chapter 9).
- Select the program suitable for the processing material by means of the PROGRAM SELECTION-button **(7)**.
  The lamp **(8)** shows which programme is active at any time.
- Slowly enter the film with the emulsion side upwards into the processor using the film guide **(G)** until it engages the drive system. Activating the input sensors will start the machine at the speed specified in the selected program.
- Verify that the WAIT-lamp **(6)** is lit indicating that film is being fed into the machine.
  Wait until this lamp turns off before you insert another film.
- When the film exits, verify that the processor goes into **stand-by** mode after 15-30 seconds.
  (See chapter 3, “STAND-BY MODE”).

PROCESSING FROM IMAGESETTER-CASSETTES

(See illustrations opposite and below).

- Check the film/paper curl (see chapter 9).
- Verify that the processor is not busy.
  (WAIT-lamp **(6)** not lit)
- Open the cassette cover **(9)**.
- Adjust the shelf **(10)** to fit the imagesetter-cassette size or remove it, whatever is necessary.
- Select processing program by means of the PROGRAM SELECTION-button **(7)**. The lamp **(8)** shows which program is active at any time.
- Place the cassette **(11)** in the daylight cassette and enter the film/paper (max. 3m) **(12)** into the processor until it engages the drive system. The input sensors start the processor and the WAIT-lamp **(6)** is lit, indicating that the machine is busy. The input roller **(13)** ensures that the material enters the machine without scratches. Close the cassette cover **(9)** and **do not open until the “WAIT” lamp (6) turns off!**
- When the WAIT-lamp turns off, the machine is ready to process from another cassette.

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T 3229

SHUT-DOWN PROCEDURE

(See illustration opposite).

- Push the OFF-button **(2)**. The exhaust fan and the time replenishment circuits will still work.
- To shut down the machine completely turn the MAIN-switch **(F)** off.
  (If time replenishment is wanted - do **NOT** turn the MAIN-switch off).
- Close the external water supply valve **(D)**.
- Open the wash-tank drain-tube **(C)** by turning it 90° counterclockwise.

NOTE! If the processor will not be operated for 6 hours or more, the wash tank should be drained. This prevents growth of algea and thereby a consequent reduction in processing quality. It is recommended to drain the wash tank at least once every 24 hours.

NOTE! If the processor is placed in a room together with a typesetter or other sensitive electronic equipment, the chemical vapours from the processor should be removed by an external exhaust system (see chapter 2) as the vapours can ruin the equipment.

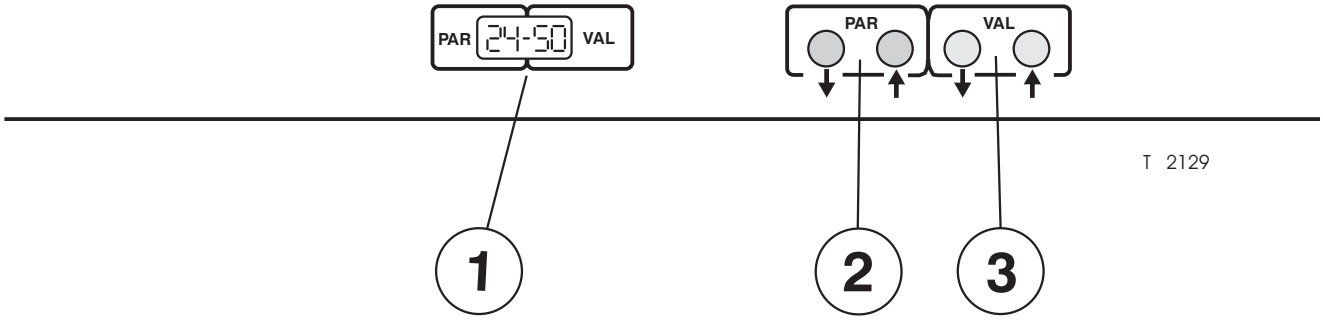
	PRG. 1	PRG. 2	PRG. 3	PRG. 4	SEC.	SEC.
DEV	14	24	34	44	ML/M2	CC/FT2
DEV	15	25	35	45	ML/M2	CC/FT2
FIX	16	26	36	46		
DEV			10		C°	F°
FIX			11		C°	F°
DRYER			12		C°	F°
OXY DEV			52		ML/H	CC/H
OXY DEV			53		ML/H	CC/H
H_2O			55		50/100%	50/100%

UK FIRST CHOOSE PARAMETER THEN CHANGE THE VALUE

D ERST DEN PARAMETER WÄHLEN DANN DER WERT ÄNDERN

FR PREMIERMENT SELECTIONNER LE PARAMETRE PUIS CHANGER LA VALEUR

ESP PRIMERO ELEGIR EL PARAMETRO Y LUEGO CAMBIAR EL VALOR



T 2129

ADJUSTMENTS

NOTE! ADJUSTMENTS SHOULD ONLY BE CARRIED OUT BY QUALIFIED PERSONNEL.

It is possible to adjust the settings of the speed, temperature and replenishment values.
Pull out the electronics drawer until it locks and the panel shown on the illustration opposite appears.
On the panel are listed the 18 different parameters you are able to adjust.
The 18 parameters and their adjusting ranges are listed below. (PAR = Parameter , VAL = Value).

NOTE! Even though the drawer is fitted with a cover to protect the electronics from chemicals, if spilled, always remember to close the drawer when adjustments have been made.

Conditions before making adjustments:
The processor must be switched ON by the MAIN-switch.

MAKING ADJUSTMENTS

(See illustration opposite).

- Pull out the electronics drawer until it locks.
- Use the red selection buttons **(2)** (PAR) to choose the parameter in which you want to change the setting.
  The parameter number is indicated on the left side of the display **(1)** and the current value is indicated on the right side. As an example the illustration opposite shows that the value for parameter **24** (Dev.time, Program 2) is currently **50** sec.
- Now use the green selection buttons **(3)** (VAL) to change the value. The values are changed in steps as indicated in the list below.

NOTE! Values can be changed at any time during operation.
Once selected, the values are retained in memory by the electronic control even when the processor is switched off.

PAR	ADJUSTMENT OF...	VAL	STEP
10.	Developer temperature	20-40°C (68-104°F)	1 °C (1-2°F)
11.	Fixer temperature	20-40°C (68-104°F)	1 °C (1-2°F)
12.	Dryer temperature.	20-70°C (68-158°F)	5 °C (9°F)
14.	Dev. time, Program 1.	15-60 sec.	1 sec.
15.	Dev. repl. rate, Program 1	0-990 ml/m2 (0-92.07 cc/ft2)	10 ml (0.93 cc)
16.	Fix repl. rate, Program 1	0-990 ml/m2 (0-92.07 cc/ft2)	10 ml (0.93 cc)
24.	Dev. time, Program 2.	15-60 sec.	1 sec.
25.	Dev. repl. rate, Program 2	0-990 ml/m2 (0-92.07 cc/ft2)	10 ml (0.93 cc)
26.	Fix repl. rate, Program 2	0-990 ml/m2 (0-92.07 cc/ft2)	10 ml (0.93 cc)
34.	Dev. time, Program 3.	15-60 sec.	1 sec.
35.	Dev. repl. rate, Program 3	0-990 ml/m2 (0-92.07 cc/ft2)	10 ml (0.93 cc)
36.	Fix repl. rate, Program 3	0-990 ml/m2 (0-92.07 cc/ft2)	10 ml (0.93 cc)
44.	Dev. time, Program 4.	15-60 sec.	1 sec.
45.	Dev. repl. rate, Program 4	0-990 ml/m2 (0-92.07 cc/ft2)	10 ml (0.93 cc)
46.	Fix repl. rate, Program 4	0-990 ml/m2 (0-92.07 cc/ft2)	10 ml (0.93 cc)
52.	Dev Oxi Time-replenishment	0-600 ml/h (cc/h)	20 ml (20 cc)
53.	Fix Oxi Time-replenishment	0-600 ml/h (cc/h)	20 ml (20 cc)
55.	Wash water	50 or 100%	50%

6. CLEANING AND MAINTENANCE

GENERAL

Performing maintenance regularly reduces the possibilities of equipment failure and the loss of processing quality. Only one person should be responsible for performing the preventive maintenance programme. That person should be familiar with the equipment as well as its operational characteristics and maintenance requirements.

A periodic major clean-up of the equipment is important to maintain the processing quality and reliability of the machine.
This clean-up should be performed either monthly or after processing app. 1000m^2 (10.000 ft^2) of film.

The major clean-up procedure can be performed in 2 to 4 hours depending on the condition of the machine and on the proficiency of the person cleaning it.

WARNING! Personnel performing any maintenance or clean-up must familiarize themselves with the "SAFETY INSTRUCTIONS" and "ENVIRONMENTAL PROTECTION" described in Chapter 0 before attempting any of these procedures.

WARNING! Be sure to disconnect electrical power before performing any cleaning or maintenance.

DRIP TRAY

The processor is equipped with a specially designed drip tray for carrying away racks ect. for cleaning. (See chapter 3, "MAIN COMPONENTS).

REMOVING A WET RACK

When cleaning and maintaining the processor it will be necessary to remove the racks from the processor.
Remove and reinstall the racks properly, according to the following description.

(See the figure opposite).

- Turn the MAIN-switch off.
- Remove top cover and condensation lid.
- **STEP 1:** Place the drip tray **(A)** across the machine as close to the bath as possible.
- Grab the rack in the handle opposite the drive shaft and tilt it upwards while the bearings are still resting on the drive shaft **(B)**.
- Hold the rack in this position for a few seconds while chemicals drip off.
- **STEP 2:** Lift the rack off the drive shaft and place it on the drip tray **(A)**.
- Carry the tray and rack away for cleaning etc.
- Reinstall the rack in the reverse order.

NOTE! Make sure that the bearings catch the drive shaft and the drive gears mesh with the worm gears.

NOTE! If the bath contains chemicals when the rack is inserted, lower it very careful to avoid that chemicals flow over into the other tanks. Extra caution should be taken to avoid that fixer splashes into the developer section.

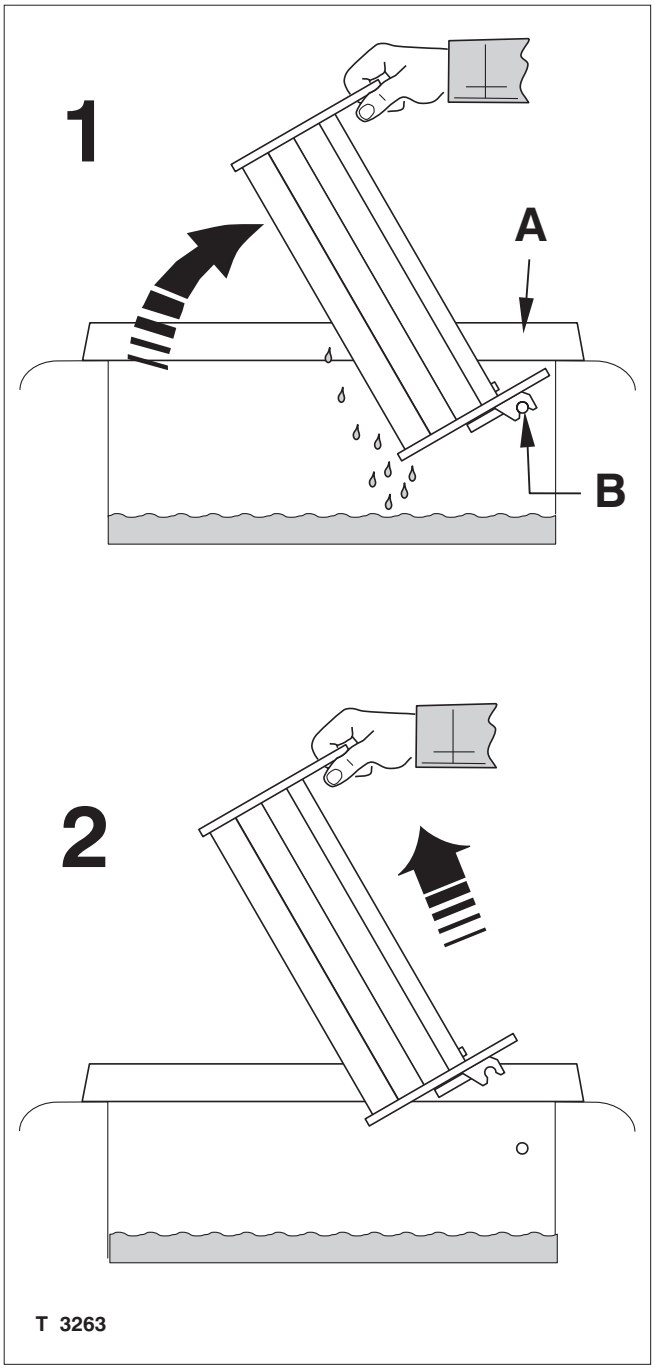


Fig. 6/1

REMOVING THE DRYER RACK

When the dryer rack has been removed from the processor, it is very important that it is reinstalled properly. Remove and reinstall according to description below.

(See the figure opposite).

- Remove top cover, condensation lid, and dryer cover.
- **STEP 1**: Stand on the rear side of the machine. On the upper dryer cassette **(A)** is a knob **(B)** on the righthand side. Press the knob down and turn it 90° counterclockwise.
- Remove the upper dryer cassette by lifting it up a little and pull it to the right, out of the flange **(C)**.
- **STEP 2**: Push the dryer rack to the right in order to release the bearings and gears from the drive shaft **(D)**, and lift it out of the processor.
- After cleaning, it is very important that the dryer rack is installed properly according to step 3.
- **STEP 3**: Place the rack in the processor and hold it up to the wash-tank wall **(E)**. Then push it to the left **(F)** until the bearings catch the drive shaft and the gears mesh with the worm gears.
- Reinstall upper dryer cassette and all covers.

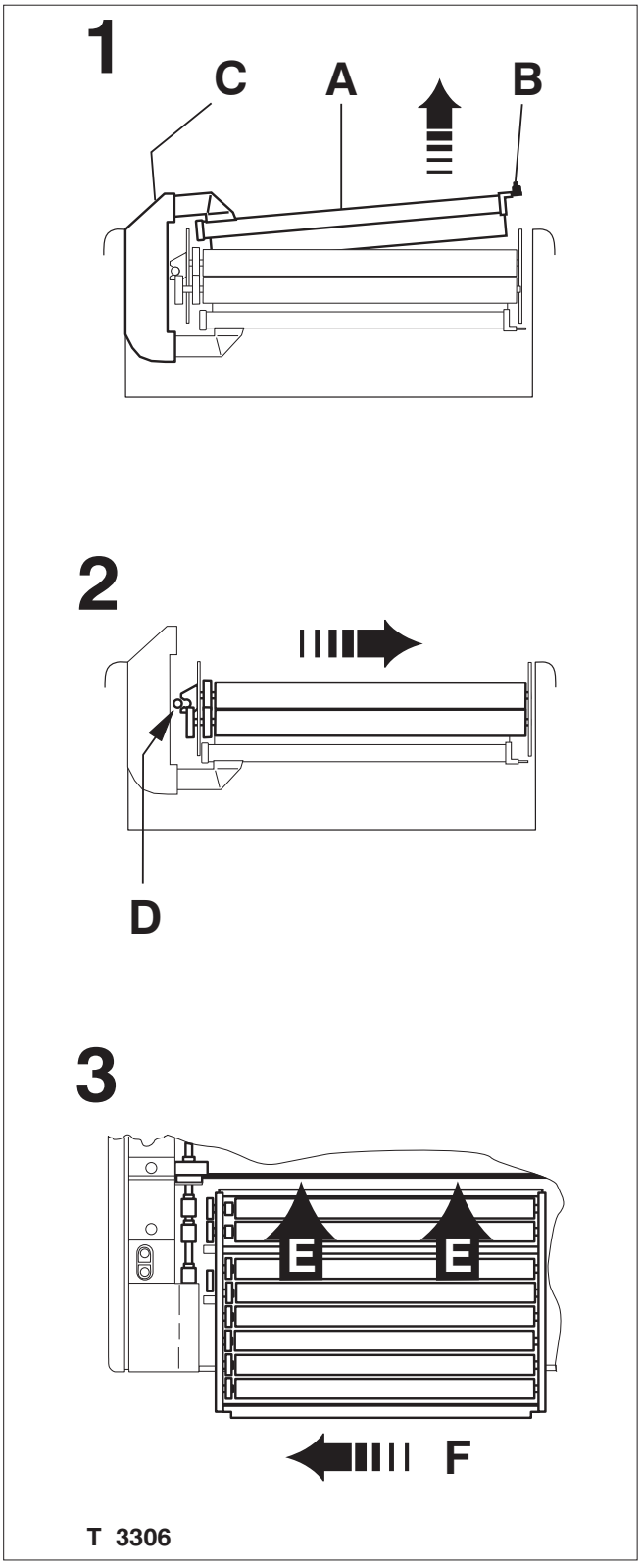
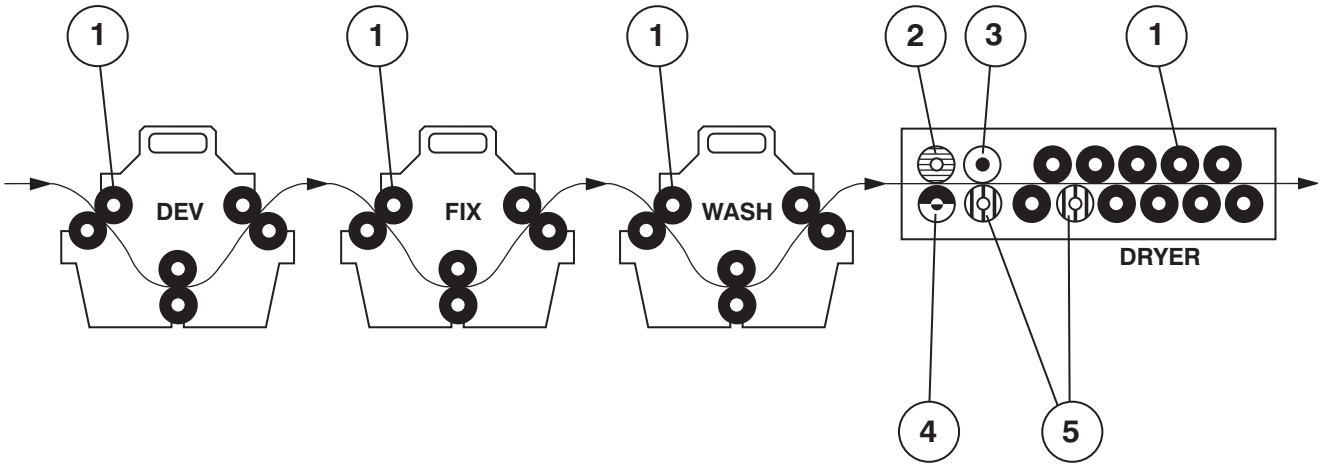


Fig. 6/2



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1	28 pcs.	PART NO. 23975 PUR, D30, MATTED LIGHT, GREEN TAP
2	1 pc.	PART NO. 23977 PUR, D30, MATTED HEAVY, SHORT WHITE TAP
3	1 pc.	PART NO. 23979 RUBBER, D30 SHORT STEEL TAP
4	1 pc.	PART NO. 23980 RUBBER, D30 LONG STEEL TAP
5	2 pcs.	PART NO. 23978 PUR, D30, MATTED LIGHT, LONG STEEL TAP

ROLLERS

When racks and rollers have been removed from the machine for cleaning or servicing purposes, it is very important that they are reinstalled in their correct positions again.
The illustration opposite shows the type, part no., and correct position of each roller.

SPECIAL BEARINGS

When reinstalling the roller pairs in the racks after cleaning etc. be very careful that the bearings are locked properly in the respective slots as indicated in the figure below.
The roller pair at the processor entrance (in the developer rack) is different from the rest as it is equipped with springloaded bearings.

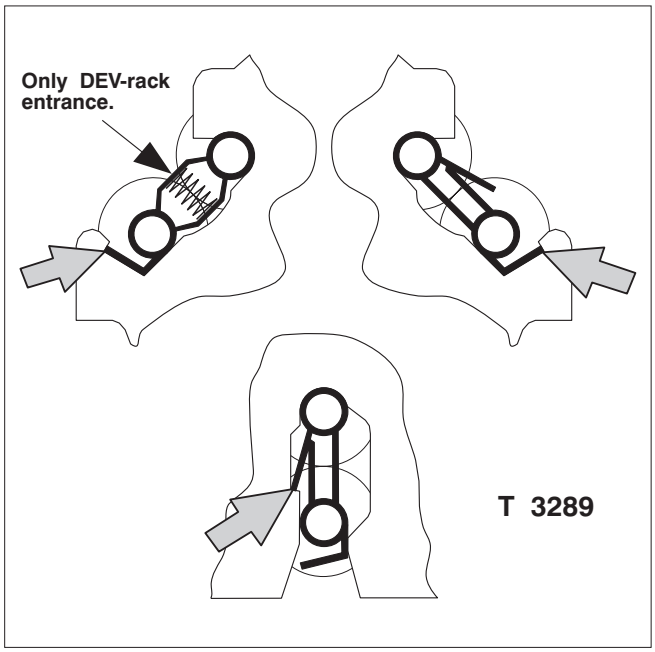


Fig. 6/3 Roller bearings

REMOVING THE DRIVE SHAFT

The drive shaft can be removed from the machine for cleaning or servicing (see Fig. 6/4).

- Turn MAIN-switch off and unplug the unit.
- Remove top cover, dryer cover, condensation lid, upper air-distributing box, and all racks from the machine.
- Remove the four screws **(1)** that hold the motor bracket.
- Remove the assembly by pulling it out of the bearing **(2)** in the tank front.
- All gears are mounted on the drive shaft by means of clips **(3)** which can be easily pulled out using a pair of pliers.
- Before reassembling the machine you must be sure that all worm gears are placed correctly on the shaft.
- Reinstall the racks and make sure that the drive shaft engages the bearings on the rack ends properly and that the worm gears mesh with the drive gears on the racks.

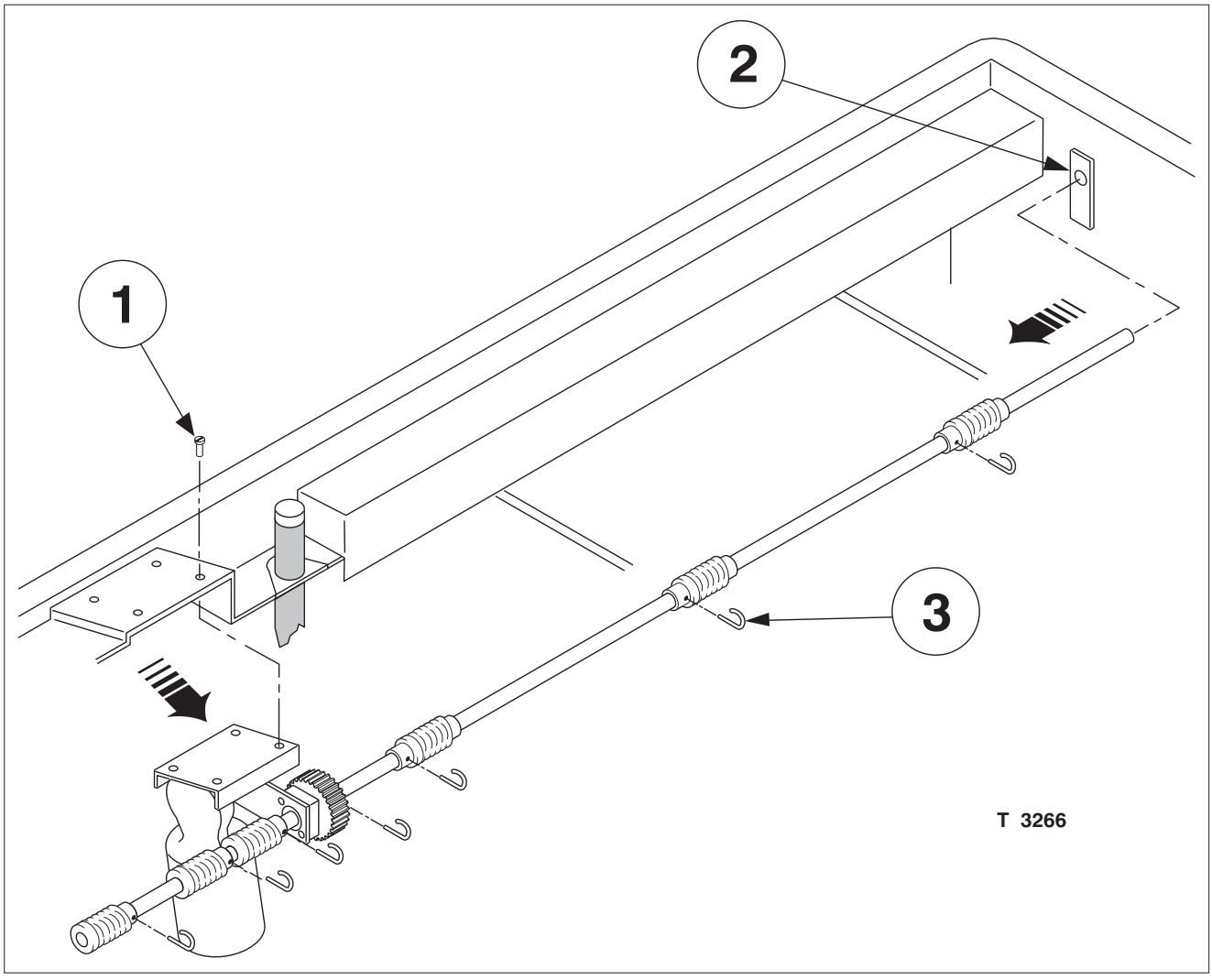


Fig. 6/4

CLEANING

GENERAL

When using water for cleaning purposes use warm water 35 - 40°C (95 - 104°F).

DAILY CLEANING

It is recommended to clean the processor each day before you start processing. Follow the procedure below:

- Clean the feed table with a moist cloth.
  Do not use abrasive materials on any part of the processor.
- Remove and clean interior condensation lid.
- Drain the wash tank and close the drain-tube at the end of each shift.
- Check the level in both replenishment containers and refill if needed.
- Empty the tanks for waste chemicals.

CAUTION! Never cover the machine with a cloth or piece of plastic to protect it from dust, as this prevents free circulation around the machine and can lead to overheating and increased condensation.

WEEKLY CLEANING

CAUTION! Never use any hard tools or abrasive materials when handling and cleaning the rollers.

- Carefully lift the developer rack out as described earlier in this chapter and rinse it with water.
- Be sure to rinse off possible crystallization on film guides.
  When needed, use a good tank cleaner to clean both tank and rack. Be careful not to get any of this cleaner into the fixer section.
  It is also important to get all of the cleaner out of the developer tank after cleaning and to rinse the rack in plenty of water.
- Cleaning of fixer rack is described in “MONTHLY CLEANING”.
- Carefully lift the wash rack out and rinse it with water.
- Empty wash water tank and clear off algae.

MONTHLY CLEANING

- Carefully lift the fixer rack out and rinse it with water.
- Remove dryer rack and rinse rubber rollers with water.
  Reinstall the dryer rack according to description earlier in thischapter.
- Remove and inspect all worm gears and bearings for excessive wear (see “REMOVING THE DRIVE SHAFT”). Replace any worn or damaged parts. Clean the components of any residual chemicals.
- Clean the blades and inner housing of the scavenger fan (see chapter 3, “MAIN COMPONENTS”) with a moist cloth to prevent chemical build up. Make sure that the fan spins freely.
- **(Service Technicians only):**
  Locate the water solenoid valve under the machine. Disconnect the hose from the valve by unscrewing the union nut, and remove the water filter with a pair of pliers (see the figure below). Clean the filter and reinstall it.

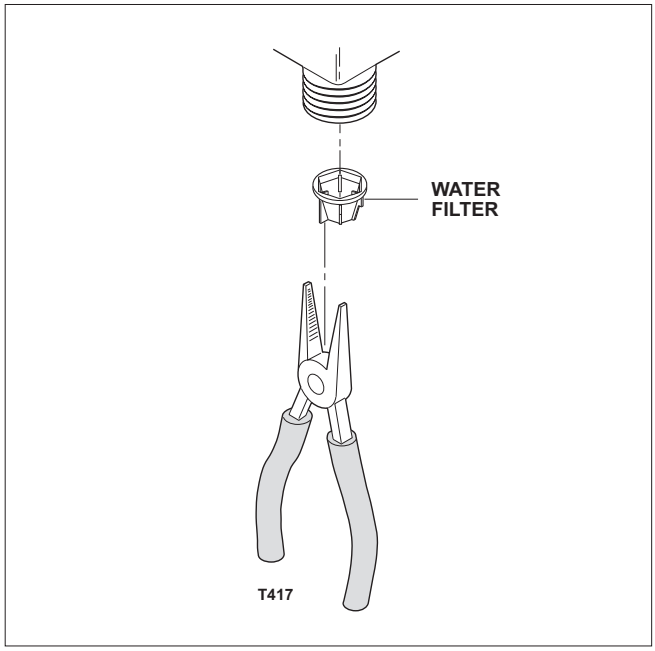


Fig. 6/5 Water filter

CHECK OF DEVELOPER REPLENISHMENT

The developer can either be checked with a control strip, ask your local specialist, or you can use a well exposed and well processed film as reference. If, after a week's work, the density of your film has decreased the replenishment has probably been too low and a higher setting of the REPLENISHMENT RATE (PAR 15, 25, 35, and 45 - see chapter 4 and chapter 9) should be selected. If, however, the density is good, the replenishment is sufficient. If desired, a lower setting can then be tried, until it is established which setting of the control is enough for satisfactory replenishment.

CHECK OF FIXER REPLENISHMENT

While the processor is working at its normal temperature and speed, feed an unexposed film into the processor. The film should be absolutely transparent and without whitish spots or areas spread at random over the film when it comes out of the processor, otherwise the activity of the fixer is too low and more replenishment should be added. (PAR 16, 26, 36, and 46 - see chapter 4 and chapter 9).

The effectivity of the fixer and the silver contents of the fixer can also be tested with a special testing strip. Ask your local specialist for application of testing strip.

CHECK OF OXIDATION REPLENISHMENT

If the processor is left in stand by for longer periods, this feature can be used. At the start of a new working period, check the activity of the developer as described, and adjust the TIME REPLENISHMENT RATE correspondingly.

(DEV = PAR 52, FIX = PAR 53, see chapter 4 and chapter 9).

CLEANING OF VALVES IN THE REPLENISHMENT PUMPS

NOTE! SERVICE TECHNICIANS ONLY!

If a replenishment pump ceases to function properly, let it suck some luke-warm water in order to clear the valves of chemicals.

If this does not help, take the pump apart and clean both of the small valves (see the figure below) in warm water.

Reinstall the valves and make sure, that they are placed correctly for free, unobstructed flow.

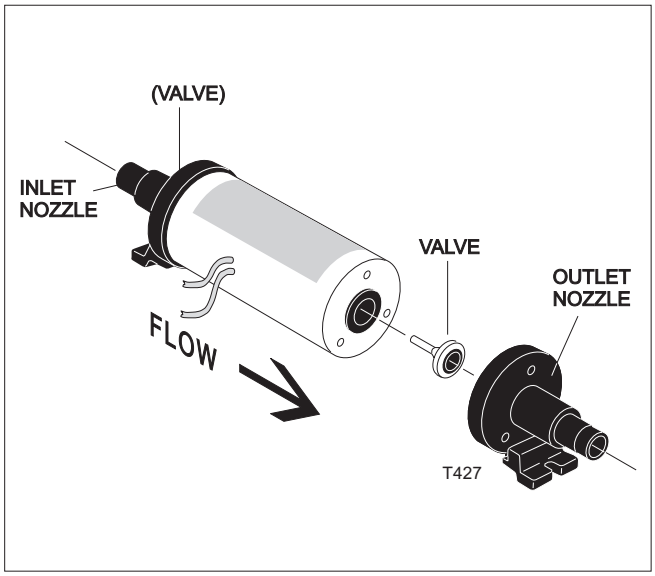


Fig. 6/6 Replenishment pump

DEVELOPER FILTER

Some processors are equipped with a developer filter. Cleaning of the developer filter is described in a separate manual delivered with the processor.

CLEANING OF CIRCULATION PUMP

NOTE! SERVICE TECHNICIANS ONLY

If a circulation pump ceases to function properly clean the pump following the description below.

See the figure below.

- Remove top cover and condensation lid.
- Empty the tank and remove the rack.
- Dismount the cover to the right of the wet sections.
- Remove the pump unit **(A)** by lifting the bracket out of the tank wall attachments **(B)**.
- Pull the pump unit out as far as the electric wire allows.
- Dismount the cover **(C)** by turning it 90° counterclockwise and pull out the impeller **(D)** and remove the O-ring **(E)**.
- Clean the cover, the impeller, and the o-ring in warm water.
- Assemble the pump and make sure that the outlet nozzle of the cover is turned to the lower left corner as indicated on the front view **(G)** and that the outlet nozzle fits exactly in the nozzle attachment **(F)** on the bracket.
- Pull back the electric wire and mount the pump unit in the tank attachments **(B)**.

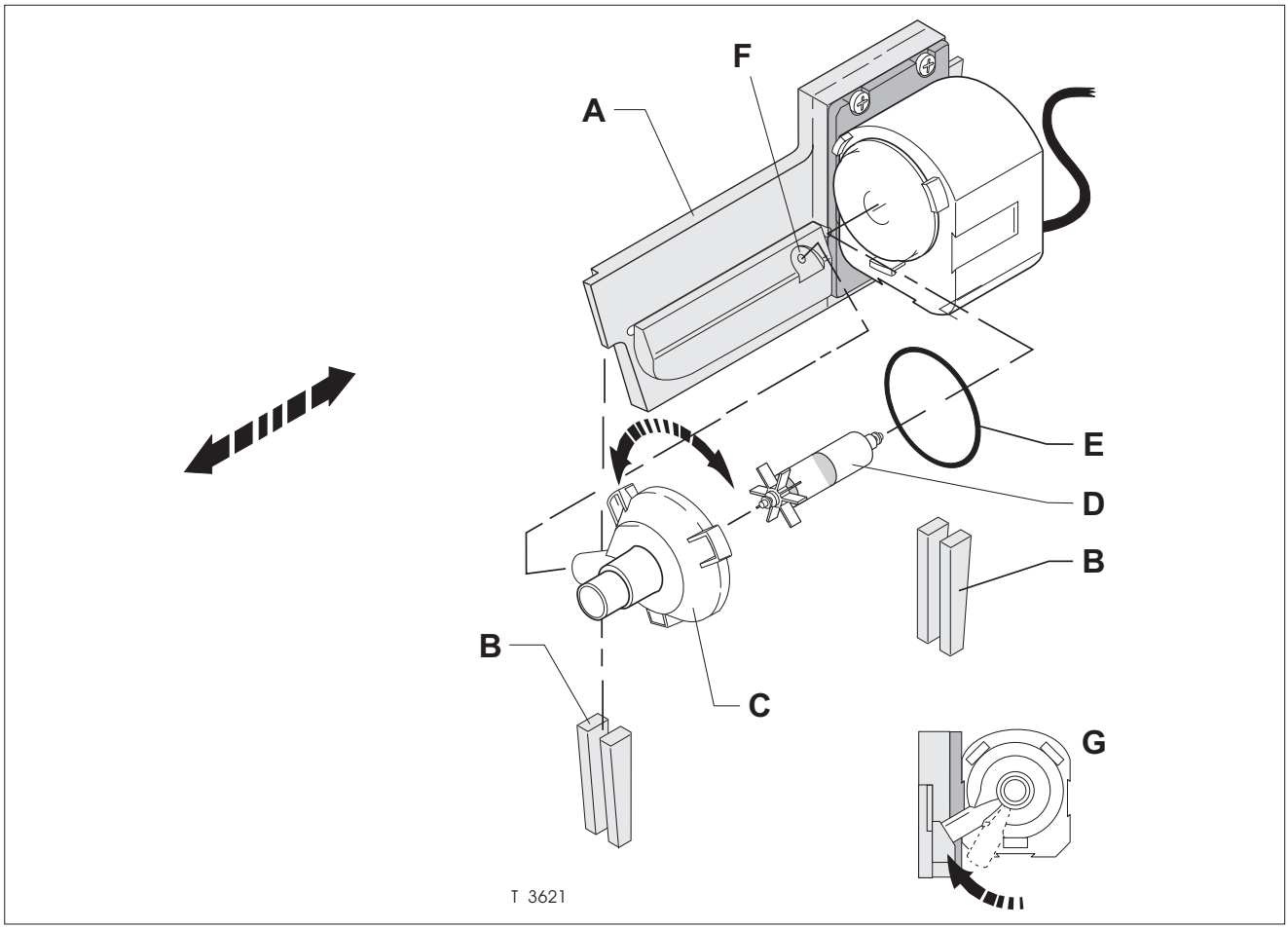


Fig. 6/7

MAINTENANCE

REPLACING AN INPUT SENSOR

NOTE! SERVICE TECHNICIANS ONLY

The machine is equipped with 2 input sensors located in a special rail at the processor entrance. To replace a sensor follow the description below: (See the figure opposite)

- Turn the MAIN-switch off.
- Remove top cover and condensation lid.
- Drain the developer bath by turning the drain tube 90° counterclockwise.
- Carefully lift out the developer rack as described earlier in this chapter.
- Remove feed table or cassette, whatever is fitted.
- Loosen the 6 screws **(A)** by turning them **6 rounds** counterclockwise.
- Now the rail with the sensors **(B)** can be removed by lifting it up as much as possible and at the same time turning the lower part backwards. Lower the rail to get the sensors free of the tank wall.
- Disconnect the plug at the left side of the sensor.
- Replace the sensor and remember to connect the plug again.
- Mount the sensor rail in the opposite order.
- Close drain tube, fill section with developer (see chapter 5, “INITIAL START-UP”) and carefully insert the rack in the section.
- Put back all covers on the machine, turn MAIN-switch on and push ON-button on the Control Box.
- Check function of new sensor.

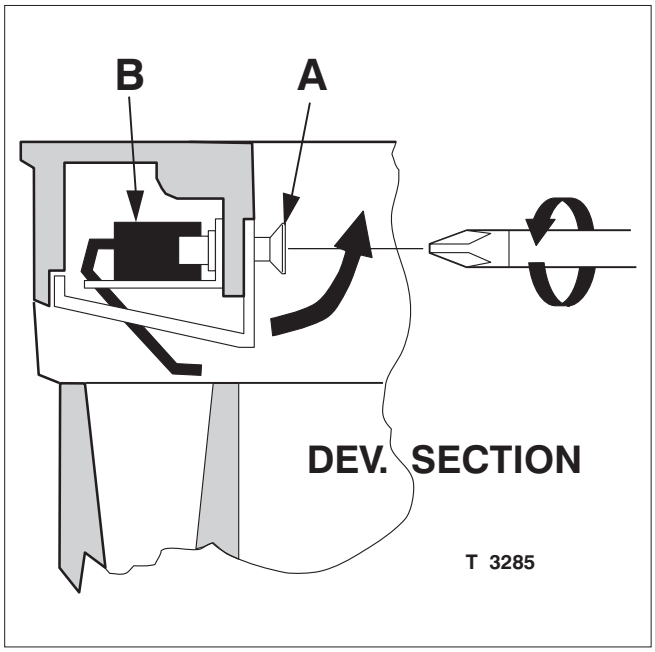


Fig. 6/8

REPLACING A FUSE

NOTE! AUTHORIZED PERSONNEL ONLY

The fuses for the various functions are all placed in the electronics drawer. The fuses for the power supply, transformer, bath heaters, pumps and motors are placed on the PCB **GCB** through the cover. The dryer heater fuse **F1** is placed through the right side panel of the drawer and the fuse **F15** for the exhaust blower is placed on the small circuit board PCB **GSB01** underneath the drawer cover.
See chapter 3, “FUSES” for more information about the fuses.

In order to change a fuse, do the following:

- Turn MAIN-switch off.
- Push the OFF-button on the control panel.
- Pull the electronics drawer halfway out until it locks, then release the lock and pull the drawer all the way out.
- Locate the fuse you want to replace. Turn the fuseholder 90° counterclockwise and pull it out.
- To change the fuse F15 you have to dismount the four screws holding the cover, one in each side of the drawer at the front and two at the top. Remeber to mount the cover again when finished.
- Change the fuse with a new fuse of the correct rating according to the fuselist in chapter 3.
- Replace the fuseholder and close the drawer.

NOTE! Remember to close the drawer when the fuse has been changed, in order to protect the electronics from chemicals, if spilled.

7. TROUBLE SHOOTING

GENERAL

If the machine does not work according to the description in this book or does not process the material correctly, the following pages are meant as a help for you.
Read them carefully and find the paragraph that comes closest to your problem.

For references see chapter 6, “CLEANING AND MAINTENANCE” and the electrical diagram on the fold out page.
For fuse designation, please refer to chapter 3, “FUSES”.

NOTE! When changing a fuse, first switch off all power to the machine. Always ensure that the new fuse is of the correct rating according to the fuselist in chapter 3.

PROBLEMS WITH THE PROCESSOR

SYMPTOM	PROBABLE CAUSE	REMEDY
NO FUNCTION ACTIVE.	One or both interlock switches deactivated. Power cable not connected to mains. MAIN-switch off . Fuse **F509** blown.	Reinstall top cover and/or dryer cover. Connect cable. Turn MAIN-switch on. Replace fuse (see chapter 3).
MACHINE WILL NOT START UP.	One or both interlock switches deactivated. Fuse **F510** blown. *Relay **K501** defective.	Reinstall top cover and/or dryer cover. Replace fuse (see chapter 3) Replace relay.
LOW LEVEL LAMP FLASHES. "WAIT" LAMP IS LIT.	Level in the respective bath too low.	Check that drain tubes are closed. Check the level in the replenishment containers. Push replenishment buttons. (See chapter 5).
PROGRAM INDICATOR LAMPS ARE FLASHING IN SUCCESSION AND WAIT LAMP IS LIT.	Film is jammed.	Remove jammed film.
MACHINE DOES NOT START WHEN FILM IS INSERTED.	*Input sensor defective. *PCB defective.	Replace defective sensor (see chapter 6). **Call Service Technician**.
MACHINE WILL NOT GO TO STAND BY AFTER END OF PROCESSING CYCLE.	*Input sensor defective. Machine in CONT mode (PAR 07 = 01). *Electronics defective.	Replace defective sensor (see chapter 6). Change value in PAR 07 to 00 (see chapter 9). **Call Service Technician**.
NO WASH WATER.	*Water solenoid valve defective or filter in valve clogged. External water tap closed.	Replace defective valve part or rinse filter (see chapter 6). Open external water tap.
DRYER BLOWER WORKS, HEATER DOES NOT.	Parameter for dryer heating set too low. *Electronics defective. Fuse **F1** blown. *Relay **K503** defective.	Correct value in PAR 12 (see chapter 5 and chapter 9) **Call Service Technician.** Replace fuse (see chapter 3). Replace defective relay.

PROBLEMS WITH THE PROCESSOR

SYMPTOM	PROBABLE CAUSE	REMEDY
DRYER BLOWER AND HEATER DO NOT WORK.	Fuse **F1** and/or **F505** blown. *Electronics defective.	Replace fuse (see chapter 3). **Call Service Technician.**
DEVELOPER AND/OR FIXER REPLENISHMENT PUMPS WORK BUT NO REPLENISHMENT.	Replenishment containers empty. Replenishment hoses blocked. •*Pump valves clogged or defective.	Refill containers. Clean hoses. Clean valves (see chapter 6).
DEV PUMP DOES NOT WORK.	*Pump defective. Fuse **F508** blown.	Replace defective parts. Replace fuse (see chapter 3).
FIX PUMP DOES NOT WORK.	*Pump defective Fuse **F507** blown.	Replace defective parts. Replace fuse (see chapter 3).
PUMPS WORK BUT ONLY IN MANUAL.	*Electronics defective.	**Call Service Technician**.
REPLENISHMENT SYSTEM WORKS ALTHOUGH NO MATERIAL IS PASSING THE SENSORS. MACHINE IS IN AUTOMATIC MODE.	*Input sensor defective. Time-replenishment circuits are ON. *PCB defective.	Replace defective sensor (see chapter 6). Change value in PAR 57 to 00 (see chapter 9). **Call Service Technician.**
DEVELOPER IS NOT HEATING UP. "WAIT" LAMP AND LEVEL INDICATOR LAMP NOT LIT.	Fuse **F504** blown. Parameter for DEV heating set too low. *Electronics defective. *Heater element defective. *Temperature sensor defective.	Replace fuse (see chapter 3) Correct value in PAR 10 (see chapter 5 and chapter 9) **Call Service Technician.** Replace heater element. Replace temperature sensor.
DEVELOPER OVERHEATS.	Parameter for DEV heating set too high. *Electronics defective. *Temperature sensor defective.	Correct value in PAR 10 (see chapter 5 and chapter 9). **Call Service Technician**. Replace defective sensor.

PROBLEMS WITH THE PROCESSOR

SYMPTOM	PROBABLE CAUSE	REMEDY
FIXER IS NOT HEATING UP LEVEL LAMP NOT LIT.	Fuse **F503** blown. Parameter for FIX heating set too low. *Electronics defective. *Heater element defective. *Temperature sensor defective.	Replace fuse (see chapter 3) Correct value in PAR 11 (see chapter 5 and chapter 9) **Call Service Technician**. Replace heater element. Replace temperature sensor.
FIXER OVERHEATS.	Parameter for FIX heating set too high. *Electronics defective. *Temperature sensor defective.	Correct value in PAR 11 (see chapter 5 and chapter 9) **Call Service Technician.** Replace defective sensor.
DRIVE MOTOR DOES NOT RUN NEITHER IN AUTO NOR IN CONT MODE.	Fuse **F512** blown. *Drive motor defective. *Electronics defective.	Replace fuse (see chapter 3) Replace defective motor. **Call Service Technician.**
DRIVE MOTOR RUNS, BUT NO FILM TRANSPORT.	Defective gear on drive motor, rollers or drive shaft. *Material jammed inside the machine.	Replace any defective worm or gear (see chapter 6) Check that all rollers move freely and that no films are jammed in the sections.
DEVELOPER AND/OR FIXER CIRCULATION PUMP DOES NOT RUN.	Fuse **F506** blown. Low level in DEV and/or FIX section. Pump defective	Replace fuse (see chapter 3). Push replenishment buttons (see chapter 5). Replace pump.
PUMPS RUN BUT NO CIRCULATION	Pump inlet blocked Circulation hose blocked.	Clean inlet. Clean hose.

PROBLEMS WITH PROCESSED MATERIAL

SYMPTOM	PROBABLE CAUSE	REMEDY
FILM IS NOT COMPLETELY DRY.	Machine runs too fast.	Try a programme with longer dev. time.
	Dryer section malfunctioning.	See pages 7/2 and 7/3.
	Dryer temperature set too low.	Correct value in PAR 12 (see chapter 5 and chapter 9).
	Fixer needs hardener.	Add hardener to the fixer.
THE FILM LOOKS MILKY I.E. WHITISH AREAS AT RANDOM OVER THE FILM	The fixing is insufficient.	Check mixture.
	Fixer too old or weak.	Correct value in PAR 16, 26, 36, 46 or 53 (see chapter 5 and chapter 9).
		Change fixer.
	Fixer too cold.	Correct value in PAR 11 (see chapter 5 and chapter 9).
		Check fixer heater function.
	Water runs from the wash setion into the fixer section where it cools and dilutes the fixer.	Check that the water drain hose is not clogged or forms a water trap.
THE FILM HAS TOO LOW DENSITY ALTHOUGH EXPOSURE IS CORRECT AND FILM NOT TOO OLD.	Developer is exhausted.	Change developer.
	Developer is too cold.	Correct value in PAR 10 (see chapter 5 and chapter 9).
		Check developer heater function.
	Developing time is too short.	Try a program with longer dev. time.
	Replenishment insufficient.	Correct value in PAR 15, 25, 35, 45, or 52 (see chapter 5 and chapter 9)
	Circulation pump in developer does not run.	See page 7/4.
FILM HAS STRIPES LENGTHWISE OR CROSSWISE.	Defective or dirty rollers or guides.	Take the rollers and guides out, inspect and wash them (see chapter 6)
		Rollers and guides with dents or other marks must be changed.

PROBLEMS WITH PROCESSED MATERIAL

SYMPTOM	PROBABLE CAUSE	REMEDY
FILM HAS A TENDENCY TO STICK IN THE WET OR DRY SECTION.	Rollers or guides out of position or dirty. Fixer too old. Fixer needs hardener. Fixer exhausted.	Check rollers and guides for correct position (see chapter 6). Change fixer. Add hardener. Correct value in PAR 16, 26, 36, 46 or 53 (see chapter 5 and chapter 9).
FILM HAS A GREY FOG.	Fixer in developer.	Clean the developer tank, developer rollers and change the developer.
FILM HAS A DICHROIC FOG.	Developer is drawn into fixer.	Clean the fixer tank, fixer rollers and change the fixer.

8. ORDERING SPAREPARTS

GENERAL

PARTS DELIVERED

In APPENDIX A is a list of the parts delivered with the machine as well as a list of the Installation Kit and the Spareparts Kit.

ORDERING SPAREPARTS

When ordering spareparts please state carefully the sparepart number, the specification and the number of items wanted.
If, though, a certain sparepart is not specified in this chapter, see APPENDIX A “ADDITIONAL SPAREPARTS”.

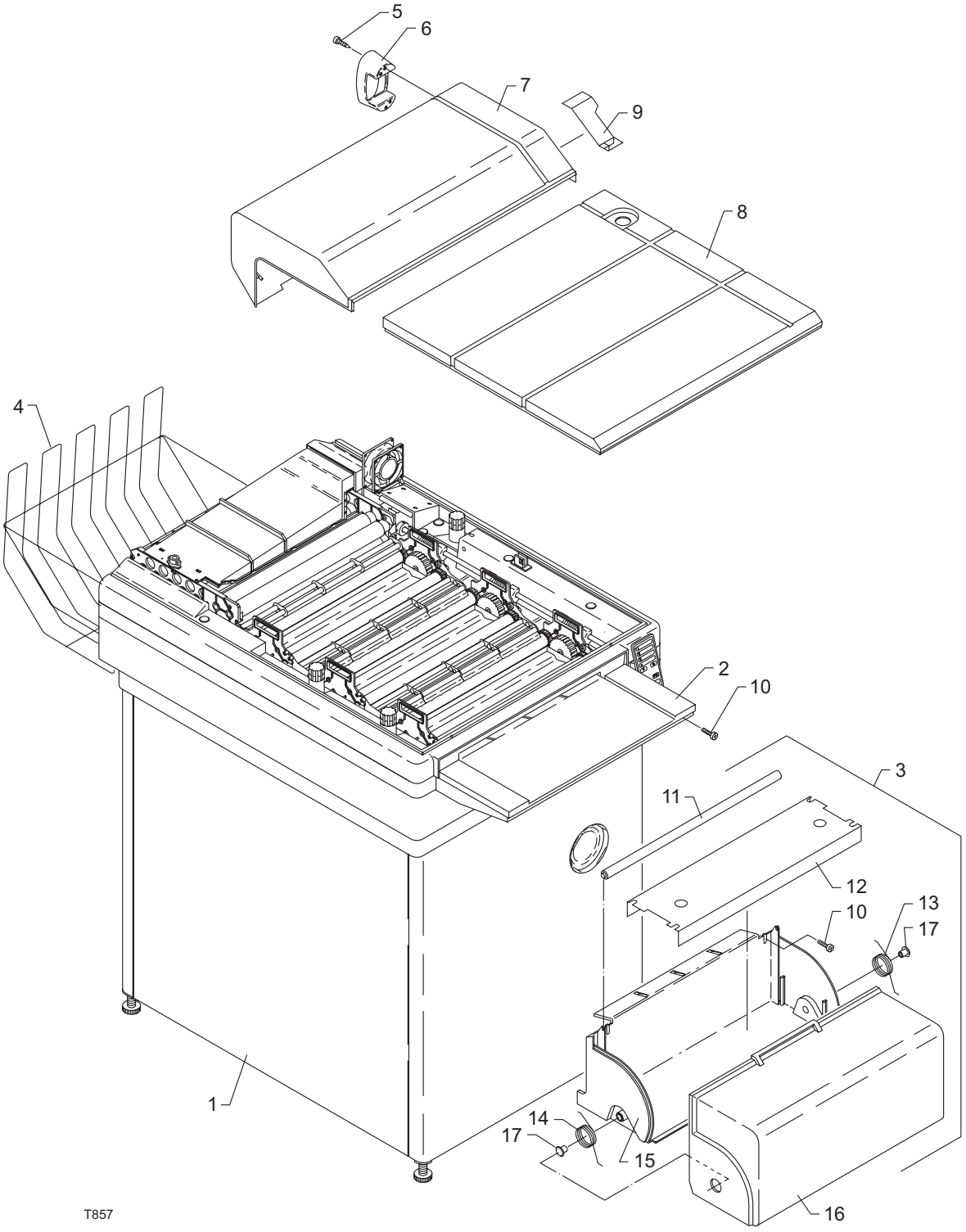
NOTE! If the processor is part of an OnLine installation some partnumbers may be different from those mentioned in this manual. Please see OnLine manual for additional and/or changed partnumbers.

DEALER INFORMATION RECOMMENDED SPAREPARTS

On the right side of the spare parts lists is a column of numbers indicating the minimum of the part we recommend the dealer to have in stock if service obligation is for 10 machines.

ISO-METRIC DRAWINGS AND SPAREPARTS

ON THE FOLLOWING PAGES ARE THE ISO-METRIC DRAWINGS WITH SPAREPARTS AND PART NUMBERS



COMPLETE MACHINE

SPAREPARTS COMPLETE MACHINE

Pos.No.	Part No.	Specification	Rec. Spares
1		***SEE APPENDIX A***	
2		***SEE APPENDIX A***	
3		***SEE APPENDIX A***	
4		***SEE APPENDIX A***	
5	15271	SCREW M4X12 PZD	
6	23987	EXHAUST FLANGE	
7		***SEE APPENDIX A***	
8		***SEE APPENDIX A***	
9		***SEE APPENDIX A***	
10	***25420***	***LOCKING PIN***	
11	***23951***	***ROLLER, CASSETTE D22X469.5***	
12	***12471***	***SHELF, CASSETTE***	
13	***14471***	***SPRING, RIGHT, CASSETTE***	
14	***14470***	***SPRING, LEFT, CASSETTE***	
15	***11557***	***CASSETTE, BOTTOM***	
16		***SEE APPENDIX A***	
17	34020	STOPPER, CASSETTE	
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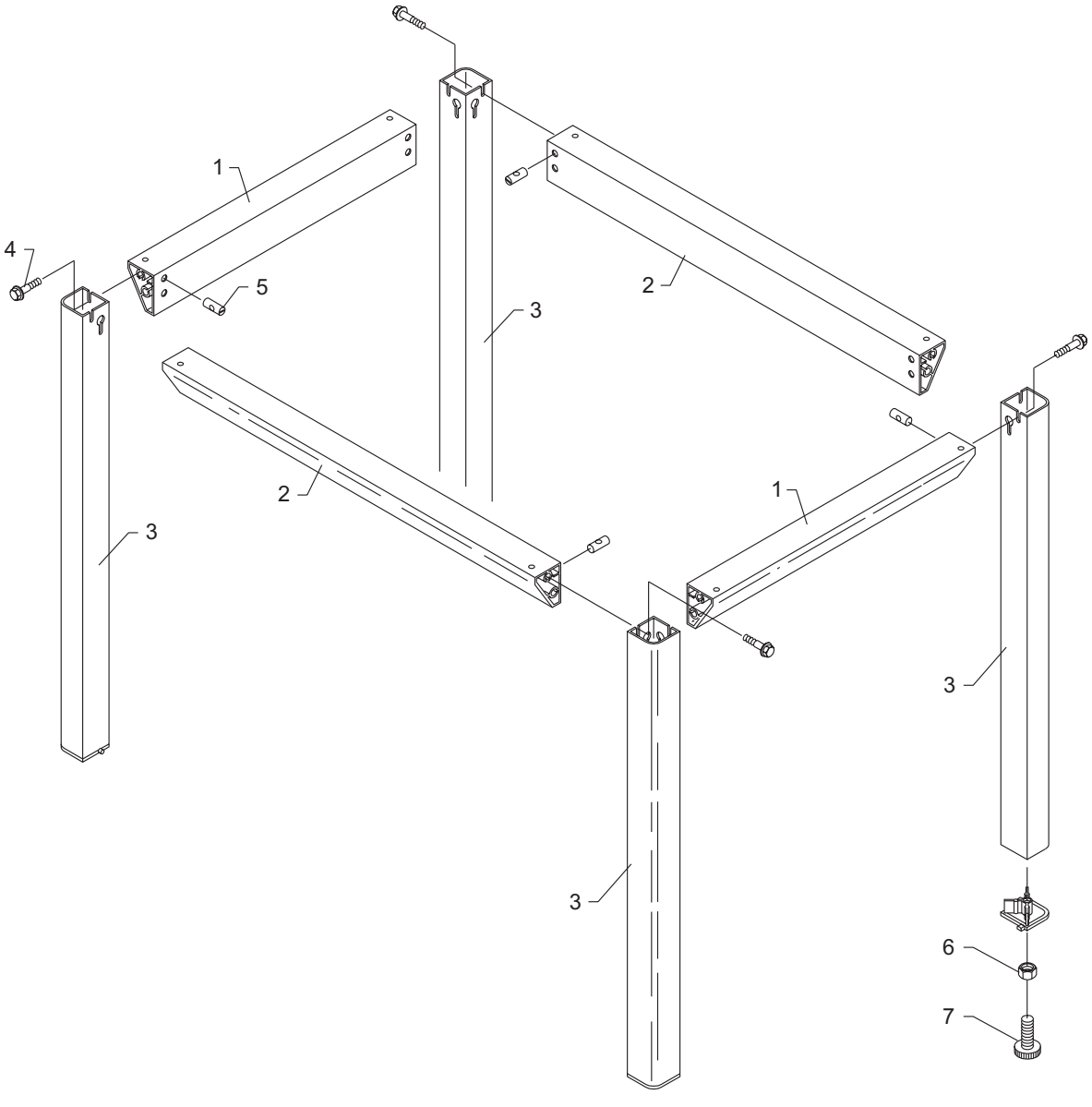

OPEN STAND

SPAREPARTS OPEN STAND

Pos.No.	Part No.	Specification	Rec. Spares
1		***SEE APPENDIX A***	
2		***SEE APPENDIX A***	
3		***SEE APPENDIX A***	
4	15263	SCREW M6X30 HE	
5	34056	NUT M6/D10X33	
6	1504	NUT M10 HE	
7	6051	LEG, ADJUSTABLE	
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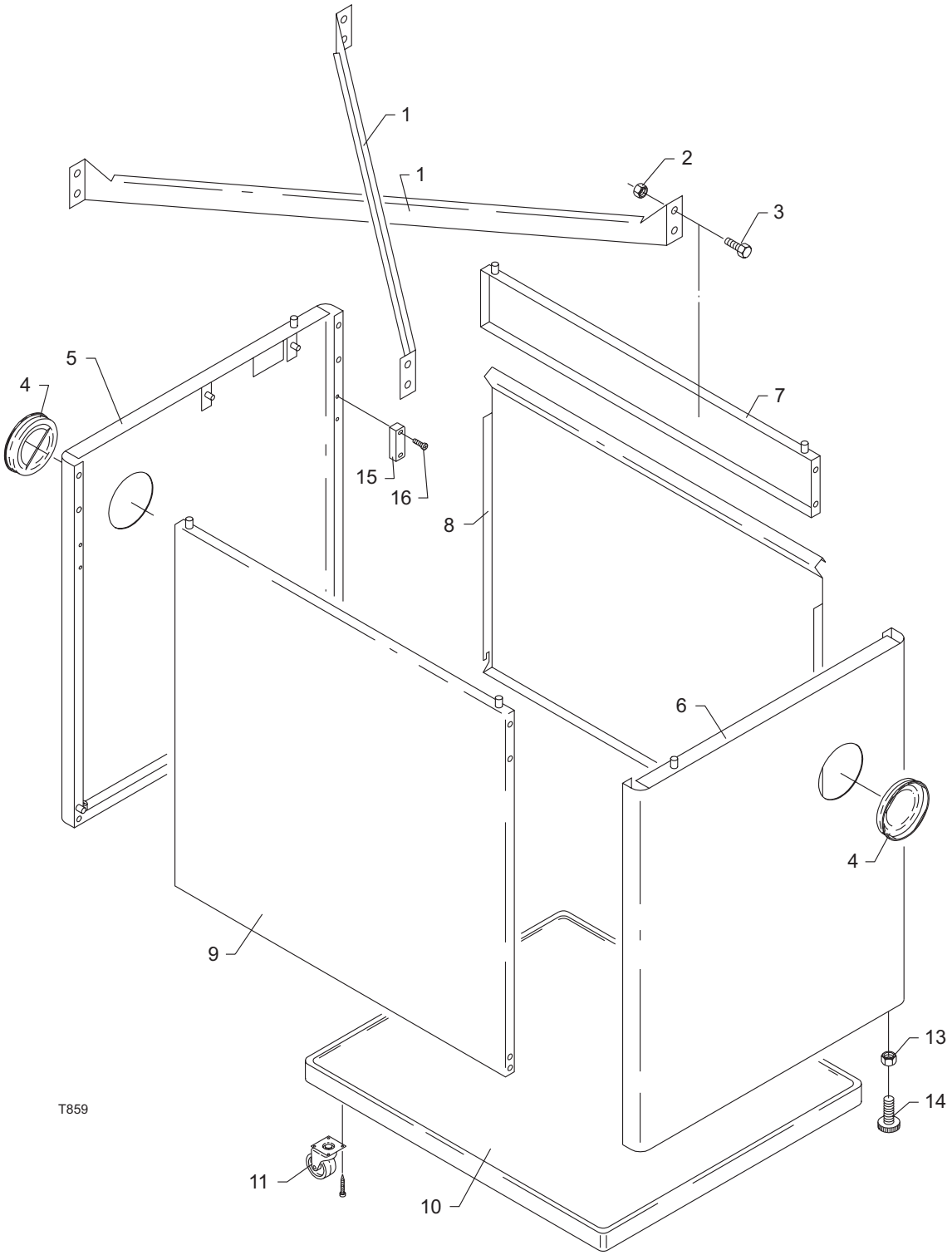

CLOSED STAND

SPAREPARTS CLOSED STAND/TROLLEY

Pos.No.	Part No.	Specification	Rec. Spares
1		***SEE APPENDIX A***	
2	5064	NUT M6 HE	
3	5246	SCREW M6X10 HE	
4	1388	STOPPER D120X10	
5		***SEE APPENDIX A***	
6		***SEE APPENDIX A***	
7		***SEE APPENDIX A***	
8		***SEE APPENDIX A***	
9		***SEE APPENDIX A***	
10		***SEE APPENDIX A***	(OPTION)
11	25281	WHEEL, TROLLEY	
12			
13	1504	NUT M10 HE	
14	6051	LEG, ADJUSTABLE	
15	25397	LOCK, MAGNETIC	
16	15266	SCREW M3X16	
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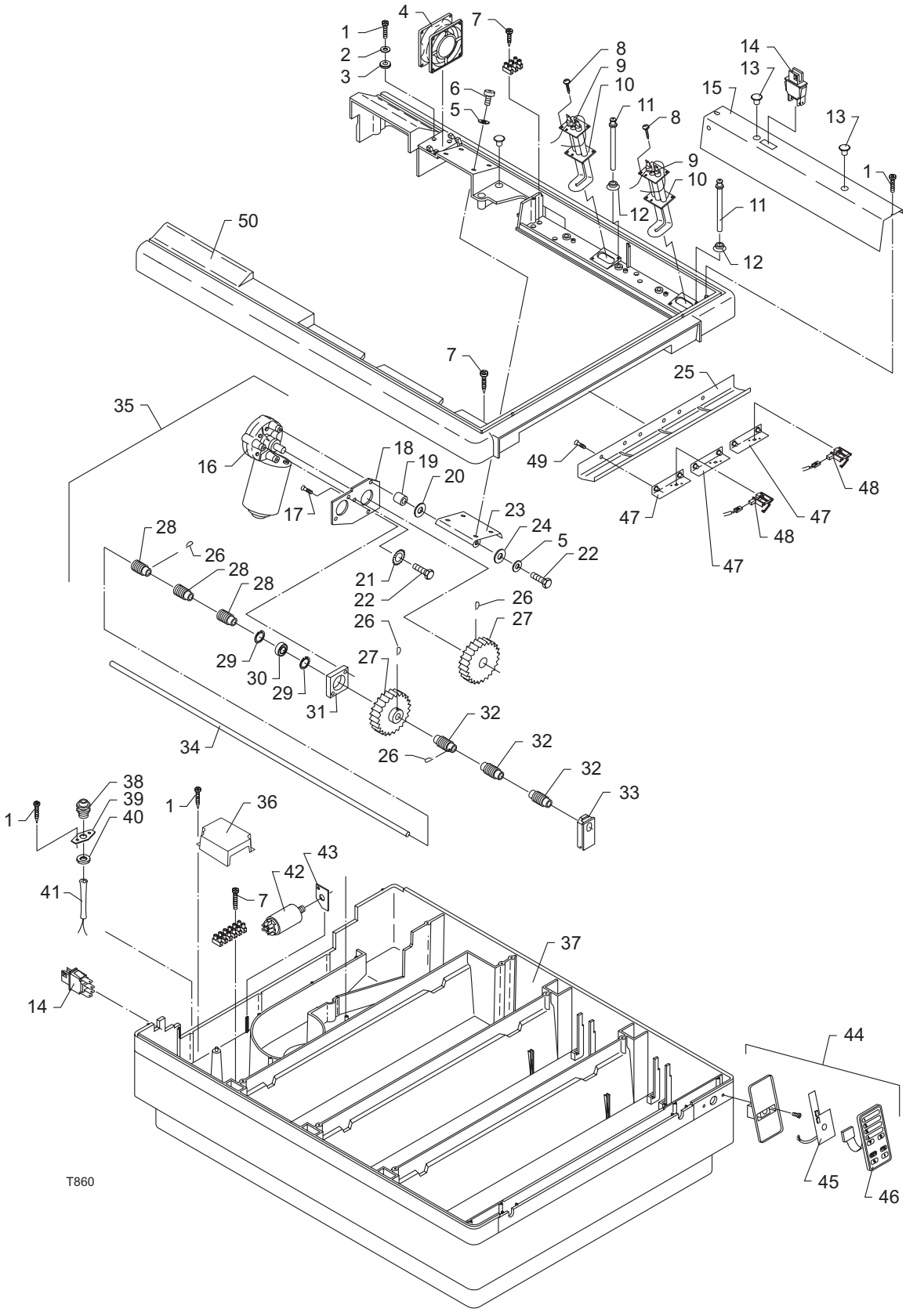
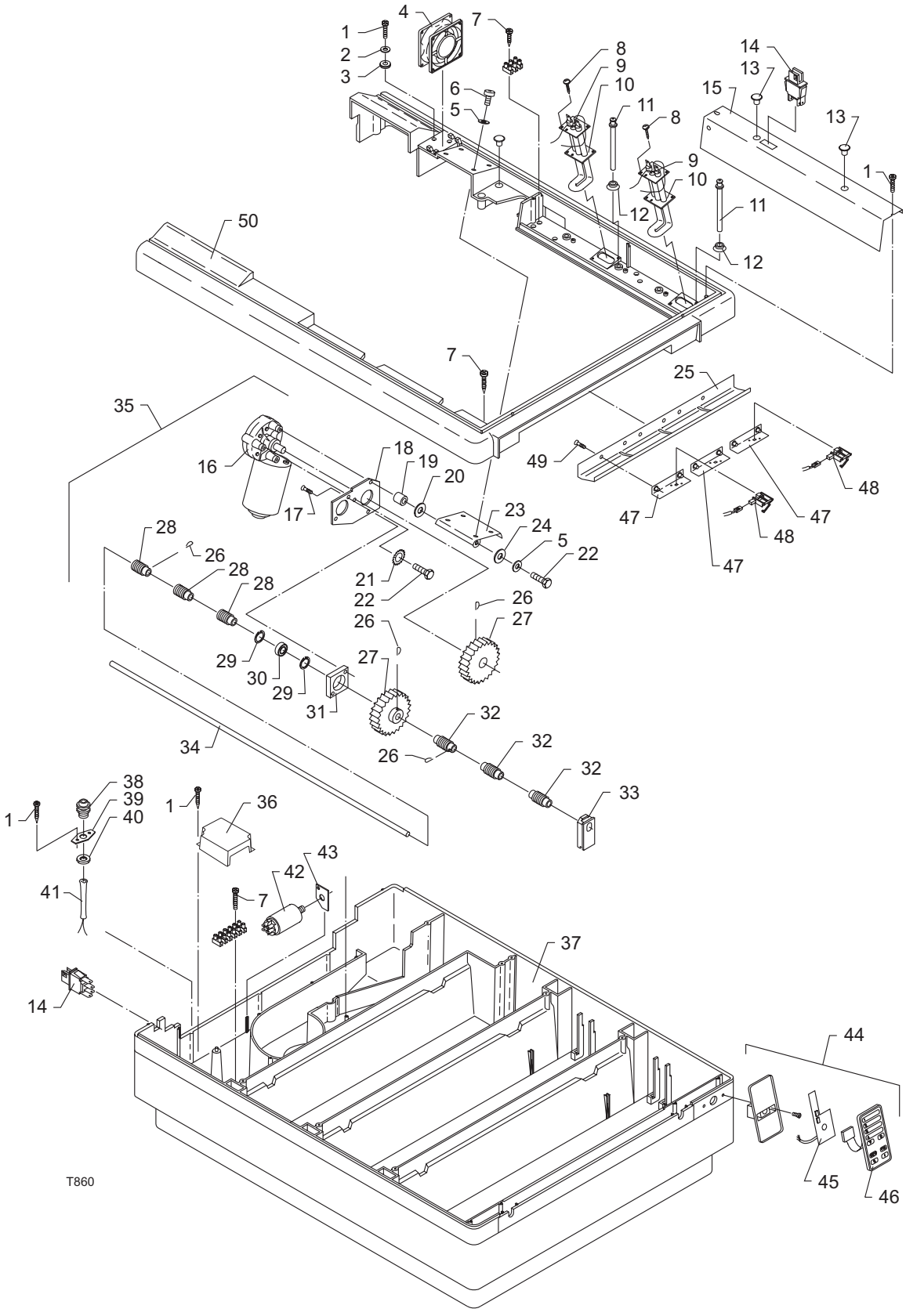


TANK SECTION

SPAREPARTS TANK SECTION

Pos.No.	Part No.	Specification	Rec. Spares
1	15274	SCREW D4X14	
2	5044	WASHER D4.3X12X1	
3	6238	GROMMET D4/8	
4	***18935***	***FAN, EXHAUST***	***2***
5	5044	WASHER D4.3X12X1	
6	15270	SCREW M4X10 CR P	
7	15275	SCREW D4X20	
8	15274	SCREW D4X14	
9	***27713***	***HEATER, DEV/FIX, 220V/400W W/GASKET***	***4***
10	14454	GASKET, HEATER	
11	***16546***	***SENSOR, KTY***	***2***
12	***6520***	***GROMMET, V-SEAL D10***	***2***
13	25399	STOPPER, PLASTIC	
14	***16864***	***INTERLOCK SWITCH***	***2***
15	23973	COVER, HEATERS	
16	***14619***	***MOTOR, MAIN, SWF W/FILTER***	***2***
17	15264	SCREW M4X12 CR C	
18	14448	BRACKET, MOTOR, SHAFT	
19	14450	BUSHING D6/10X6	
20	14449	WASHER, SLIDE D10.2/28	
21	5046	WASHER, LOCK D6	
22	5234	SCREW M6X20	
23	14447	BRACKET, MOTOR, TANK	
24	25396	SPRING DISC D10.2/28X1.5	
25	23954	GUIDE, FILM FEED	
26	***14452***	***CLIP D2X15.5***	***10***
27	18967	GEAR Z50 W/CLIP	
28	***18965***	***GEAR, WORM, RIGHT W/CLIP***	***5***
29	6064	CIRCLIP D10	
30	6033	BEARING, BALL D10	



TANK SECTION

SPAREPARTS TANK SECTION

Pos.No.	Part No.	Specification	Rec. Spares
31	14451	HOUSING, BEARING	
32	***18966***	***GEAR, WORM, LEFT W/CLIP***	***5***
33	23961	BEARING 40X22X12	
34	23960	SHAFT, MAIN DRIVE	
35	27710	MAIN DRIVE, COMPLETE	
36	47082	COVER, TERMINAL, W. LABEL	
37	11552	TANK, BOTTOM	
38	5177	BUSHING, CABLE PG7	
39	14462	BRACKET, SENSOR	
40	5176	NUT, BUSHING PG7	
41	***88658***	***CABLE, SENSOR, DRYER***	***2***
42	***16888***	***CAPACITOR 1uF***	***1***
43	14461	BRACKET, CAPACITOR	
44		***SEE APPENDIX A***	
45	***27714***	***PCB GTB04 W/CABLE***	***1***
46		***SEE APPENDIX A***	
47	14436	BRACKET, SENSOR, ENTRANCE	
48	***16286***	***SENSOR, REED SWITCH***	***4***
49	15265	SCREW M4X16 CR C	
50	11553	TANK, TOP	
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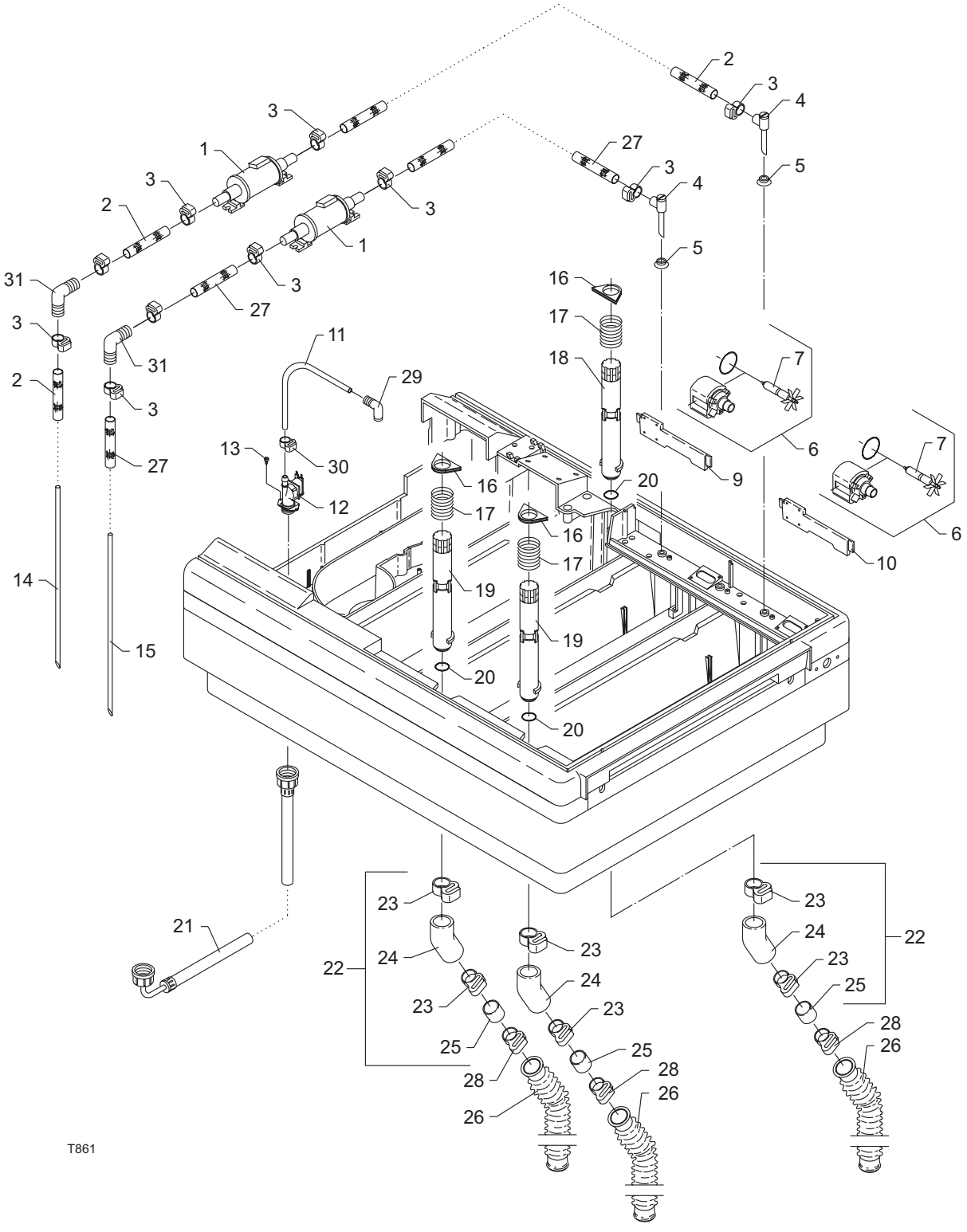
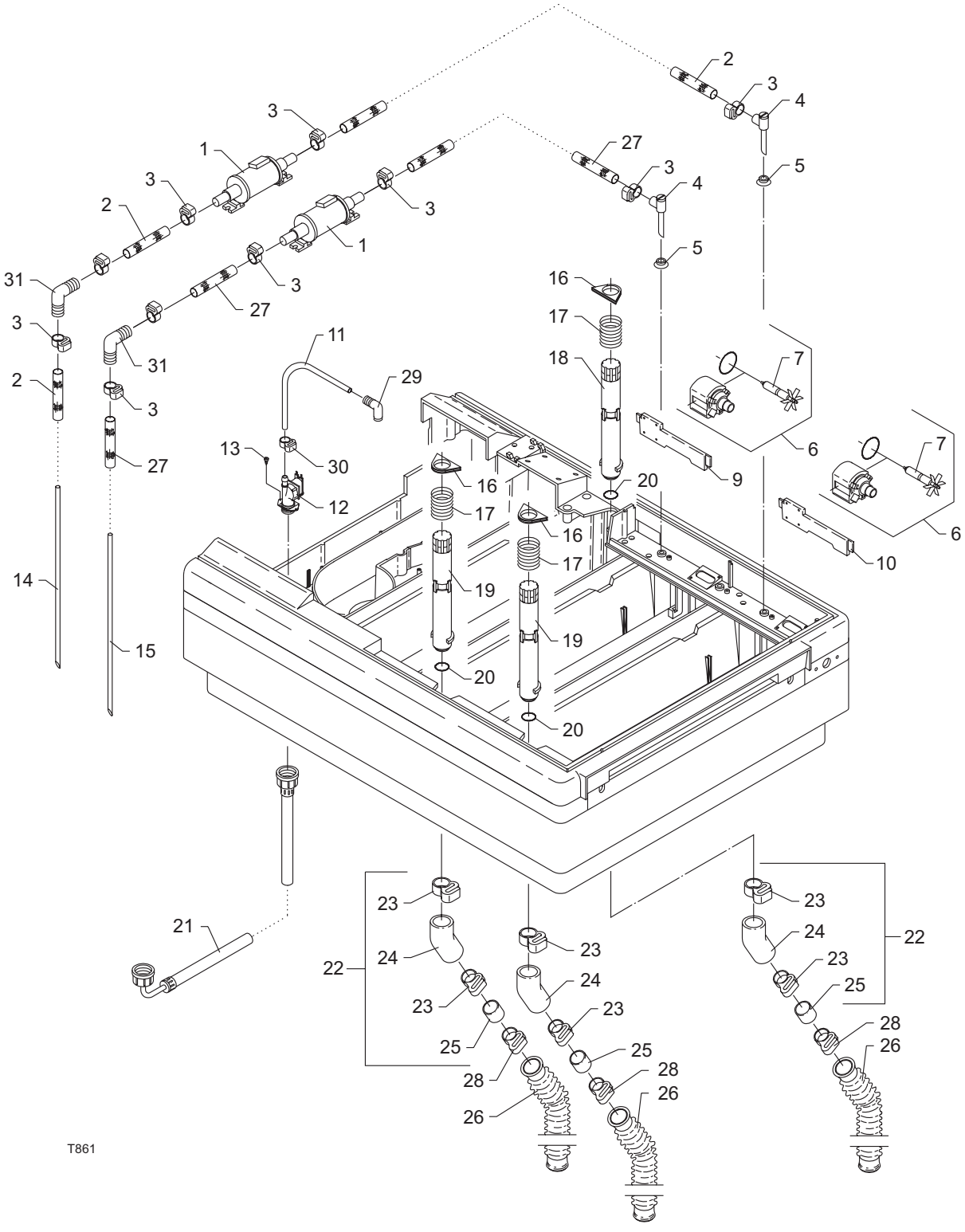


CIRCULATION SYSTEM

SPAREPARTS CIRCULATION SYSTEM

Pos.No.	Part No.	Specification	Rec. Spares
1	***1875***	***PUMP, OSCILLATION***	***4***
2	6341	HOSE, PLASTIC, D10/14, RED	
3	5313	CLAMP, HOSE D13.7-15.3 D16	
4	54201	VALVE, ELBOW	
5	25436	GROMMET, V-SEAL D12	
6	***16382***	***PUMP, CIRCULATION, DEV/FIX***	***4***
7	16429	IMPELLER	
8			
9	14623	PLATE, CIRCULATION, FIX	
10	14622	PLATE, CIRCULATION, DEV	
11	6041	HOSE, PLASTIC, D10/14, CLEAR	
12	***25392***	***VALVE, SOLENOID***	***1***
13	15270	SCREW M4X10 CR P	
14	4030	TUBE, SUCTION, GREY	
15	4030	TUBE, SUCTION, GREY	
16	14457	PLATE, STANDPIPE	
17	14458	SPRING, STANDPIPE D30X25	
18	27711	STANDPIPE, WASH W/O-RING	
19	27712	STANDPIPE, DEV/FIX W/O-RING	
20	***6302***	***O-RING D17.1X1.6***	***10***
21	25422	HOSE, WATER SUPPLY	
22	14596	FITTING, DRAIN, DEV/FIX/WASH	
23	25261	CLAMP, HOSE CLAMP D31.8-36.5	
24	14598	FITTING, RUBBER, DRAIN	
25	34166	TUBE, MODIFIED, D19.4/22/25X62	
26	25453	HOSE, FLEXIBLE D21/23	
27	6342	HOSE, PLASTIC, D10/14, BLUE	
28	25253	CLAMP, HOSE D22-25.4 PL NO.56	
29	8488	FITTING CONN 12X12	
30	6079	CLAMP,, HOSE D15-16.8	



CIRCULATION SYSTEM

SPAREPARTS CIRCULATION SYSTEM

Pos.No.	Part No.	Specification	Rec. Spares
31	25510	FIT. HOSE 12X90°	
32	Not illustrated	DEVELOPER FILTER	***SEE SEPARATE MANUAL***
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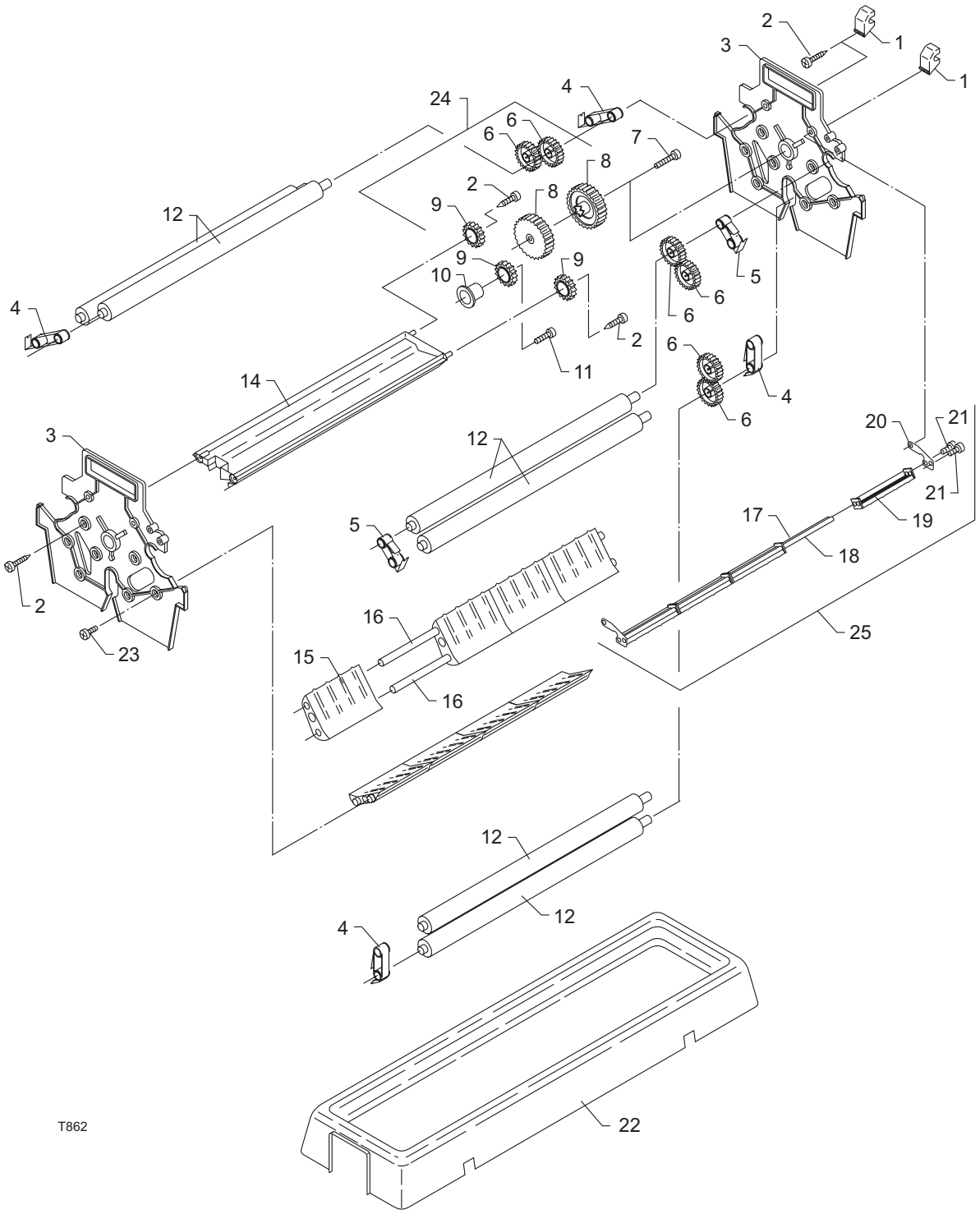

DEVELOPER RACK

SPAREPARTS DEVELOPER RACK

Pos.No.	Part No.	Specification	Rec. Spares
	27567	DEVELOPER RACK, COMPLETE	
1	12458	BEARING, DRIVE SHAFT	
2	15275	SCREW D4X20	
3	11560	PLATE, SIDE, RACK	
4	***14445***	***BEARING, ROLLERS***	***10***
5	***18880***	***BEARING, ROLLERS, W/SPRING***	***10***
6	***24107***	***GEAR Z30***	***10***
7	15273	SCREW M5X35	
8	***12457***	***GEAR Z48***	***2***
9	***14443***	***GEAR Z20***	***6***
10	14442	BUSHING, GEAR	
11	15272	SCREW M4X20 CR P	
12	***23975***	***ROLLER, PUR D30X412.5 MT,LI,SHT***	***4***
13			
14	12454	OXIDATION LID/GUIDES	
15	32403	GUIDE, MODULE 105X60X11	
16	14439	SPACER D8X427.5	
17	14440	SPACER D8X423.5	
18	14441	SPACER D6X423.5	
19	74536	GUIDE, MODULE, ENTRANCE	
20	14437	BRACKET, GUIDE	
21	15269	SCREW M4X8	
22	11580	DRIP TRAY	
23	15270	SCREW M4X10 CR P	
24	27709	GEARS, RACK, COMPLETE	
25	18962	GUIDE, ENTRANCE, DEV	
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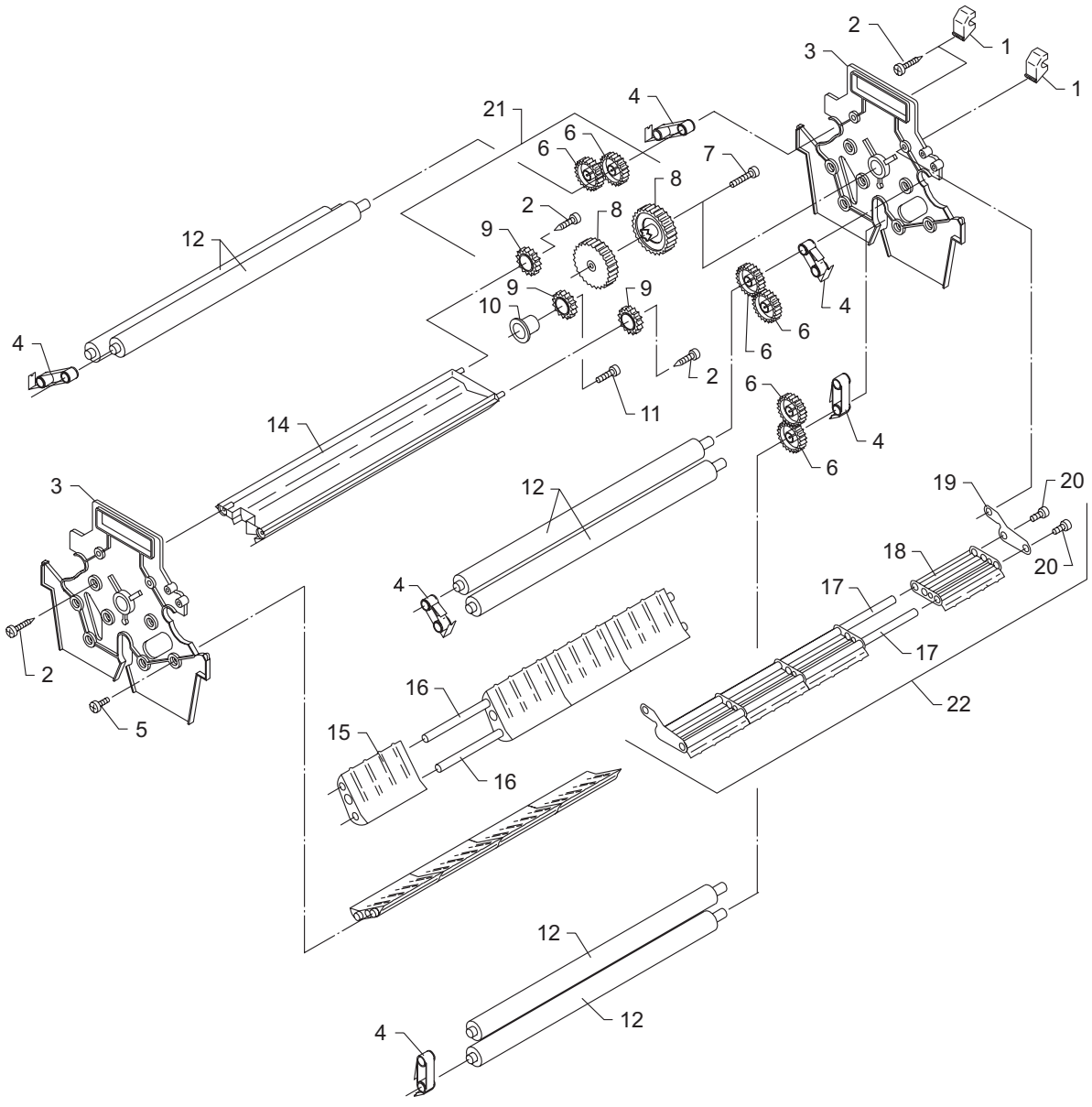

FIXER RACK

SPAREPARTS FIX RACK

Pos.No.	Part No.	Specification	Rec. Spares
	27568	FIX RACK, COMPLETE	
1	12458	BEARING, DRIVE SHAFT	
2	15275	SCREW D4X20	
3	11560	PLATE, SIDE, RACK	
4	14445	BEARING, ROLLERS	
5	15270	SCREW M4X10 CR P	
6	24107	GEAR Z30	
7	15273	SCREW M5X35	
8	12457	GEAR Z48	
9	14443	GEAR Z20	
10	14442	BUSHING, GEAR	
11	15272	SCREW M4X20 CR P	
12	23975	ROLLER, PUR D30X412.5 MT,LI,SHT	
13			
14	12454	OXIDATION LID/GUIDES	
15	32403	GUIDE, MODULE 105X60X11	
16	14439	SPACER D8X427.5	
17	14440	SPACER D8X423.5	
18	32403	GUIDE, MODULE 105X60X11	
19	14438	BRACKET, GUIDE	
20	15269	SCREW M4X8	
21	27709	GEARS, RACK, COMPLETE	
22	18961	GUIDE, CROSSOVER, FIX/WASH	
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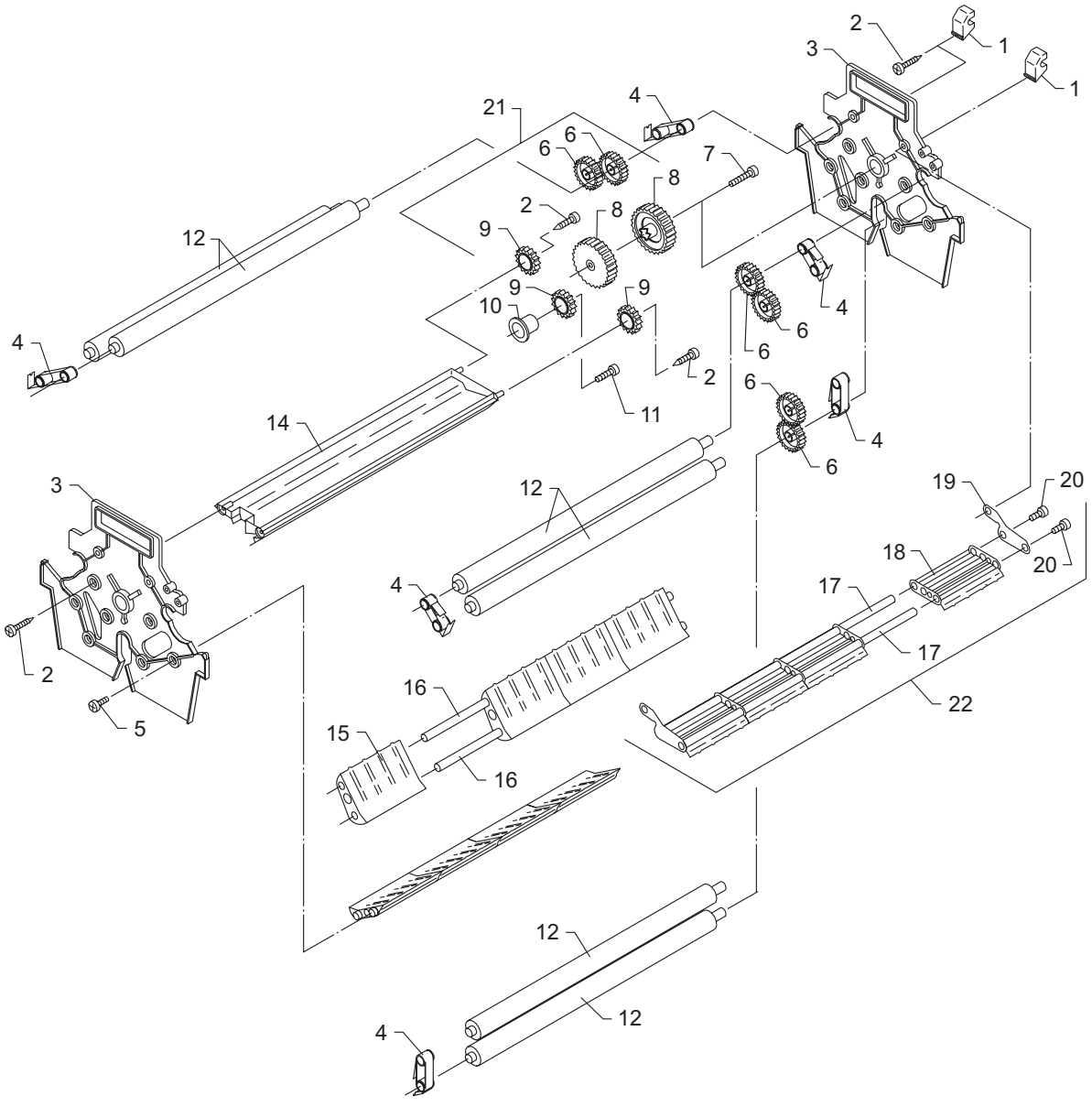

WASH RACK

SPAREPARTS WASH RACK

Pos.No.	Part No.	Specification	Rec. Spares
	27569	WASH RACK, COMPLETE	
1	12458	BEARING, DRIVE SHAFT	
2	15275	SCREW D4X20	
3	11560	PLATE, SIDE, RACK	
4	14445	BEARING, ROLLERS	
5	15270	SCREW M4X10 CR P	
6	24107	GEAR Z30	
7	15273	SCREW M5X35	
8	12457	GEAR Z48	
9	14443	GEAR Z20	
10	14442	BUSHING, GEAR	
11	15272	SCREW M4X20 CR P	
12	23975	ROLLER, PUR D30X412.5 MT,LI,SHT	
13			
14	12454	OXIDATION LID/GUIDES	
15	32403	GUIDE, MODULE 105X60X11	
16	14439	SPACER D8X427.5	
17	14440	SPACER D8X423.5	
18	32403	GUIDE, MODULE 105X60X11	
19	14438	BRACKET, GUIDE	
20	15269	SCREW M4X8	
21	27709	GEARS, RACK, COMPLETE	
22	18961	GUIDE, CROSSOVER, FIX/WASH	
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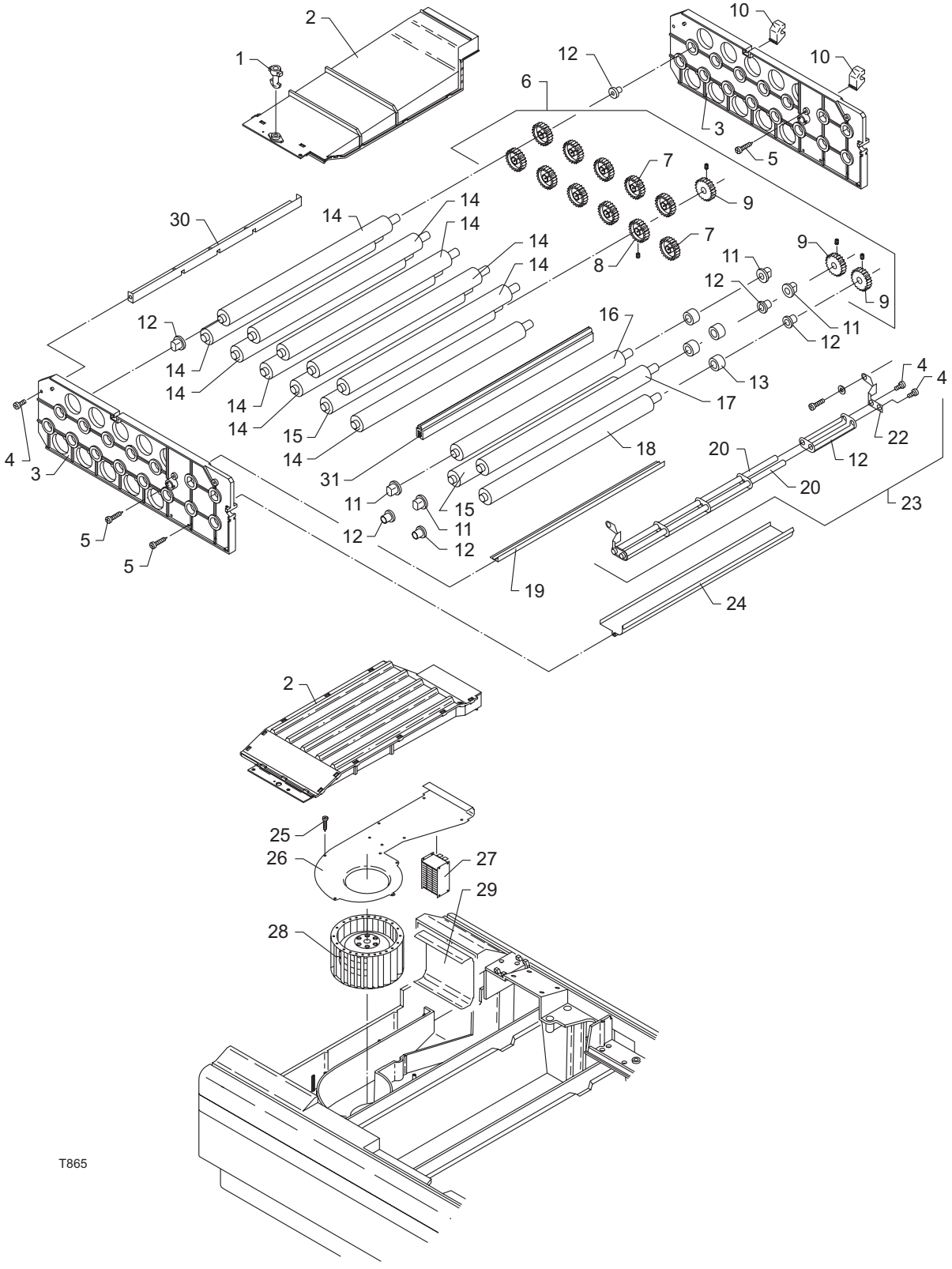
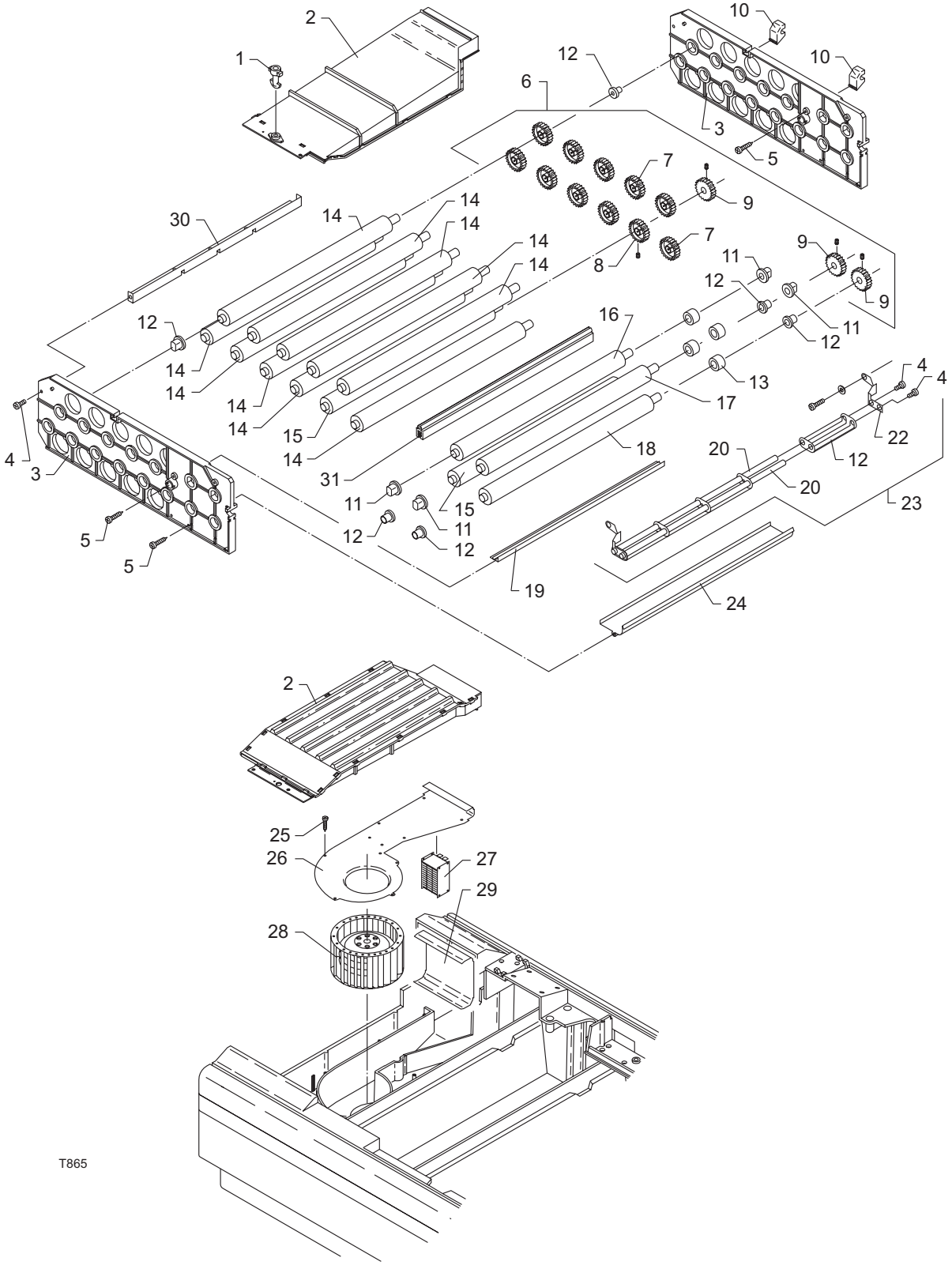


DRYER SECTION

SPAREPARTS DRYER SECTION

Pos.No.	Part No.	Specification	Rec. Spares
	27570	RACK, DRYER, COMPLETE	
1	25401	LOCK, PUSH	
2	11563	CABINET, DRYER	
3	12459	PLATE, SIDE, RACK	
4	15269	SCREW M4X8	
5	15276	SCREW D4X25	
6	27708	GEARS, DRYER RACK	
7	***4002***	***GEAR Z34***	***10***
8	***17683***	***GEAR Z34 W/SCREW***	***1***
9	***18964***	***GEAR Z29 W/SCREW***	***4***
10	12458	BEARING, DRIVE SHAFT	
11	4146	BEARING, OVAL	
12	4123	BEARING	
13	4105	STOPPER, SHAFT D10/17.5X7.5	
14	23975	ROLLER, PUR D30X412.5 MT, LI, SHT	
15	23978	ROLLER, PUR D30X410 MT, LI, LT	
16	23979	ROLLER, RUBBER D30X410 SHT	
17	23977	ROLLER, PUR D30X412.5 MT, H, SHT	
18	23980	ROLLER, RUBBER D30X410 LT	
19	14459	GUIDE, SUSPENSION L=424.3	
20	14440	SPACER D8X423.5	
21	54917	GUIDE, MODULE, ENTRANCE, DRYER	
22	23957	BRACKET, GUIDE, ENTRANCE, DRYER	
23	18963	GUIDE, ENTRANCE, DRYER	
24	14460	TRAY, DRIP	
25	15274	SCREW D4X14	
26	12460	COVER, FAN	
27	***16680***	***HEATER, DRYER, 1500W***	***4***
28	***16887***	***FAN, CENTRIFUGAL, DRYER***	***1***
29	23974	PLATE, AIR	
30	23959	BAR, SENSOR, DRYER	



DRYER SECTION

SPAREPARTS DRYER SECTION

Pos.No.	Part No.	Specification	Rec. Spares
31	34034	SPACER, DRYER RACK	
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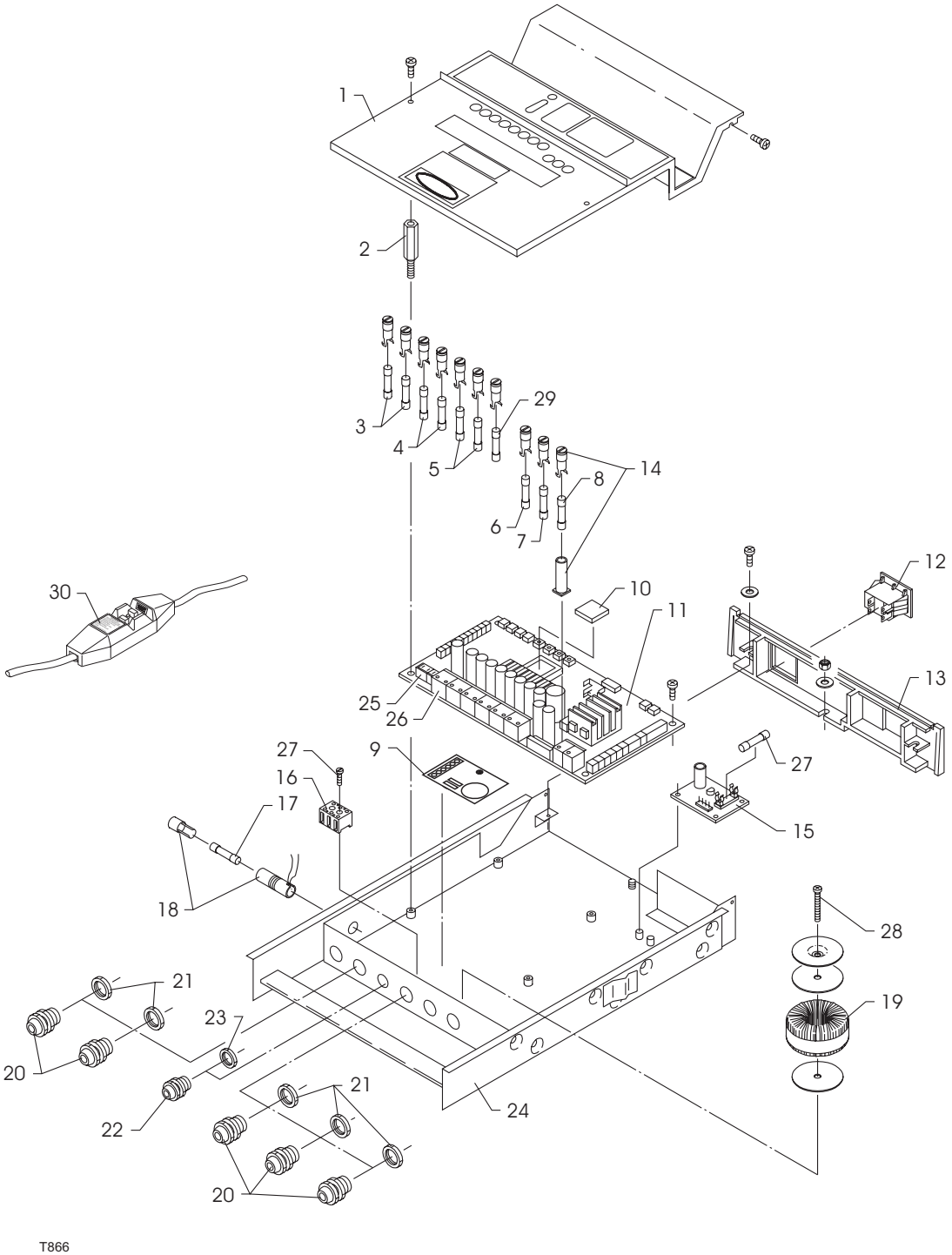


ELECTRONICS CABINET

SPAREPARTS ELECTRONICS CABINET

Pos. No.	Part No.	Specifications	Rec. Spares
1	28198	LID, CABINET	
2	25079	SPACER 5+8XM4	
3	***5534***	***FUSE 5A, 6.3X32 MM, FAST***	***10***
4	***5671***	***FUSE 1A, 6.3X32 MM, FAST***	***10***
5	***16076***	***FUSE 0.5A, 6.3X32 MM, FAST***	***10***
6	***16029***	***FUSE 1.5A, 6.3X32 MM, S/B***	***10***
7	***16075***	***FUSE 0.25A, 6.3X32 MM, FAST***	***10***
8	***16014***	***FUSE 3A, 6.3X32 MM, S/B***	***10***
9	26451	PCB, FILTER TP.2A LINE	
10	26402	SOFTWARE	
11	***97327***	***PCB, GCB05 W. E-PROM***	***1***
12	***16817***	***MAIN SWITCH, 12A***	***1***
13		***SEE APPENDIX A***	
14	***25187***	***FUSEHOLDER, COMPLETE***	***5***
15	16942	PCB, GSB01	
16	5782	TERMINAL, 3 CONN.	
17	***16079***	***FUSE, 10A, 6.3X32 MM, FAST***	***10***
18	***16847***	***FUSEHOLDER, COMPLETE***	***5***
19	16439	TRANSFORMATOR 18 24 26 121VA	
20	5186	BUSHING, CABLE PG16	
21	5185	NUT, BUSHING PG16	
22	5181	BUSHING, CABLE PG11	
23	5180	NUT, BUSHING PG11	
24	20609	CABINET, EL	
25	16142	PLUG, PHOENIX	
26	16140	PLUG, PHOENIX	
27	16884	FUSE 0.5A, 5X20 MM	
28	5039	SCREW M5X45 SLO CH	
29	***16340***	***FUSE 0.8A, 6.4X31.8 MM, S/B***	***10***
30		***SEE APPENDIX A***	

9. ADDITIONAL SERVICE INFORMATION

GENERAL ABOUT PARAMETERS

PARAMETER LEVELS

The program parameters are divided into 3 levels:

Level - 1 contains the parameters which are normally adjusted now and then by the operator during daily operation.

Level - 2 contains special parameters which should be adjusted only by authorized personnel who are familiar with all of the processor functions. This level of parameters becomes available by changing the value for PAR 09 from 00 to 01.

On the pages 9.2 - 9.5 are lists of the **Level - 1** and **Level - 2** parameters (EUR and USA parameters respectively). The **Level - 1** parameters are marked with a bullet (•).

On the PCB the parameters are selected using the PAR UP and PAR DOWN keys and the values are adjusted using the VAL UP and VAL DOWN keys. (See chapter 5)

WARNING! SERVICE PERSONNEL ONLY.

Level - 3 contains a number of test programs. These programs should only be operated by authorized personnel.
The test programs becomes available by changing the value in PAR 04 from 00 to 01.
(See “TEST-PROGRAM” later in this chapter for further information).

NOTE! Make sure to mount the covers for the electronics when adjustments have been made. Electronics must be protected from chemicals spills.

Parameters marked with an asterisk (*) will not change when initializing.

PARAMETERS (EUR)

(PAR=Parameter, VAL=Value, DEF=Default)

VALID FOR SOFTWARE FROM: GRAP V03 R30					
PAR	**DESCRIPTION**	**VAL**	**UNIT**	**STEP**	**DEF**
00	DEFAULT START-UP PARAMETER	00 - 99		1	10
• 01	REGENERATION AT LOW LEVEL	00 = OFF, 01 = ON			00
• 02	LIGHT, DISPLAY/LAMPS, PROG. 01	00 = OFF, 01 = ON			01
03	MOTOR STAND-BY REST TIMER	0 - 20	MIN.	2	20
NOTE! PARAMETER 04 IS FOR AUTHORIZED PERSONNEL ONLY!					
04	MODE (NORMAL OR TEST)	00 = NORMAL, 01 = TEST			00
05	STAND-BY SPEED (DEV. TIME)	15 - 60	SEC.	1	60
06	PROGRAM	01 - 04		1	01
07	MODE (AUTO OR CONT)	00 = AUTO, 01 = CONT			00
08	FILM COUNTER	00 = OFF, 01 = ON			00
• 09	SERVICE PARAMETERS	00 = OFF, 01 = ON			00
• 10	TEMP. SETTING, DEV-BATH	20 - 40	°C	1	33
• 11	TEMP. SETTING, FIX-BATH	20 - 40	°C	1	30
• 12	TEMP. SETTING, DRYER SECTION	20 - 70	°C	5	55
13	MIN. DRYER TEMP. SETTING (ST.BY)	20 - 70	°C	5	30
• 14	SPEED (DEV.TIME) PROGRAM 01	15 - 60	SEC.	1	20
• 15	REPL. RATE, DEV, PROGRAM 01	0 - 990	ML/M^2	10	250
• 16	REPL. RATE, FIX, PROGRAM 01	0 - 990	ML/M^2	10	250
17	START DEV. REPL. CALIBRATION	00 = OFF, 01 = ON			00
• 18	DEV. REPL. CALIBRATION VALUE	60 - 999	ML	1	350
19	START FIX. REPL. CALIBRATION	00 = OFF, 01 = ON			00
• 20	FIX. REPL. CALIBRATION VALUE	60 - 999	ML	1	350
• 21	OPEN VALVE AT LOW LEVEL	00 = OFF, 01 = ON			00
• 22	DISPLAY TURNAROUND	00 = NORMAL, 01 = TURN			00
23	CIRCULATION, STOP	00 = OFF, 01 = 99	%	1	00
• 24	SPEED (DEV.TIME) PROGRAM 02	15 - 60	SEC.	1	25
• 25	REPL. RATE, DEV, PROGRAM 02	0 - 990	ML/M^2	10	250
• 26	REPL. RATE, FIX, PROGRAM 02	0 - 990	ML/M^2	10	250

VALID FOR SOFTWARE FROM: GRAP V03 R30

PAR	DESCRIPTION	VAL	UNIT	STEP	DEF
• 34	SPEED (DEV.TIME) PROGRAM 03	15 - 60	SEC.	1	30
• 35	REPL. RATE, DEV, PROGRAM 03	0 - 990	ML/M^2	10	250
• 36	REPL. RATE, FIX, PROGRAM 03	0 - 990	ML/M^2	10	250
• 44	SPEED (DEV.TIME) PROGRAM 04	15 - 60	SEC.	1	40
• 45	REPL. RATE, DEV, PROGRAM 04	0 - 990	ML/M^2	10	250
• 46	REPL. RATE, FIX, PROGRAM 04	0 - 990	ML/M^2	10	250
• 47	POWER SHARING	00 = OFF, 01/02 = ON			00
• 48	LEVEL INDIC. ON CONTROL PANEL	00 = 1, 01 = 3			01
• 49	BUSY SIGNAL, INPUT SENSORS	00 = OFF, 01 = ON			01
• 50	DAYL./REW. FILM JAM ALARM	00 = OFF, 01 = ON			00
51	LOW TEMPERATURE ALARM, FIXER	02 - 20	°C	1	02
• 52	OXY DEV. TIME-REPLENISHMENT	00 - 600	ML/H	20	00
• 53	OXY FIX. TIME-REPLENISHMENT	00 - 600	ML/H	20	00
54	REPL. PULSE WIDTH (TIME)	01 - 06	SEC.	1/2	01
• 55	WASH DUTY CYCLE	50 - 100	%	50	100
• 56	PROCESSOR SIZE 400 PROCESSOR 550 PROCESSOR 720 PROCESSOR 80 PROCESSOR 860 PROCESSOR 950 PROCESSOR HYBRID (SHORT RACKS) 1250 PROCESSOR HYBRID (LONG RACKS) 1550 PROCESSOR 51 PROCESSOR	01 - 10	 01 03 04 05 05 06 06 07 07 08 09	1	 **)
• 57	OXY REPLENISHMENT IN PROCES	00 = OFF, 01 = ON			01
• 59	UNITS	00 = °C - ML/M^2 01 = °F - CC/FT^2 02 = °F - CC/INCH^2			00
63	CURRENT SOFTWARE VERSION	(FOR INFO ONLY)			
64	ACTUAL TEMP., DEV-BATH	20 - 70	°C	0.1	
65	ACTUAL TEMP., FIX-BATH	20 - 70	°C	0.1	
66	ACTUAL TEMP., DRYER SECTION	20 - 70	°C	0.1	

**) Set parameter according to the current processor type.

PARAMETERS (USA)

(PAR=Parameter, VAL=Value, DEF=Default)

VALID FOR SOFTWARE FROM: GRAP V03 R30					
PAR	**DESCRIPTION**	**VAL**	**UNIT**	**STEP**	**DEF**
00	DEFAULT START-UP PARAMETER	00 - 99		1	10
• 01	REGENERATION AT LOW LEVEL	00 = OFF, 01 = ON			00
• 02	LIGHT, DISPLAY/LAMPS, PROG. 01	00 = OFF, 01 = ON			01
03	MOTOR STAND-BY REST TIMER	0 - 20	MIN.	2	20
NOTE! PARAMETER 04 IS FOR AUTHORIZED PERSONNEL ONLY!					
04	MODE (NORMAL OR TEST)	00 = NORMAL, 01 = TEST			00
05	STAND-BY SPEED (DEV. TIME)	15 - 60	SEC.	1	60
06	PROGRAM	01 - 04		1	01
07	MODE (AUTO OR CONT)	00 = AUTO, 01 = CONT			00
08	FILM COUNTER	00 = OFF, 01 = ON			00
• 09	SERVICE PARAMETERS	00 = OFF, 01 = ON			00
• 10	TEMP. SETTING, DEV-BATH	68 - 104	°F	1-2	91
• 11	TEMP. SETTING, FIX-BATH	68 - 104	°F	1-2	86
• 12	TEMP. SETTING, DRYER SECTION	68 - 158	°F	1-2	131
13	MIN. DRYER TEMP. SETTING (ST.BY)	68 - 158	°F	1-2	86
• 14	SPEED (DEV.TIME) PROGRAM 01	15 - 60	SEC.	1	20
• 15	REPL. RATE, DEV, PROGRAM 01	0 - 92.07	CC/FT^2	0.93	23.25
• 16	REPL. RATE, FIX, PROGRAM 01	0 - 92.07	CC/FT^2	0.93	23.25
17	START DEV. REPL. CALIBRATION	00 = OFF, 01 = ON			00
• 18	DEV. REPL. CALIBRATION VALUE	60 - 999	CC	1	350
19	START FIX. REPL. CALIBRATION	00 = OFF, 01 = ON			00
• 20	FIX. REPL. CALIBRATION VALUE	60 - 999	CC	1	350
• 21	OPEN VALVE AT LOW LEVEL	00 = OFF, 01 = ON			00
• 22	DISPLAY TURNAROUND	00 = NORMAL, 01 = TURN			00
23	CIRCULATION, STOP	00 = OFF, 01 = 99	%	1	00
• 24	SPEED (DEV.TIME) PROGRAM 02	15 - 60	SEC.	1	25
• 25	REPL. RATE, DEV, PROGRAM 02	0 - 92.07	CC/FT^2	0.93	23.25
• 26	REPL. RATE, FIX, PROGRAM 02	0 - 92.07	CC/FT^2	0.93	23.25

VALID FOR SOFTWARE FROM: GRAP V03 R30

PAR	DESCRIPTION	VAL	UNIT	STEP	DEF
• 34	SPEED (DEV.TIME) PROGRAM 03	15 - 60	SEC.	1	30
• 35	REPL. RATE, DEV, PROGRAM 03	0 - 92.07	CC/FT^2	0.93	250
• 36	REPL. RATE, FIX, PROGRAM 03	0 - 92.07	CC/FT^2	0.93	250
• 44	SPEED (DEV.TIME) PROGRAM 04	15 - 60	SEC.	1	40
• 45	REPL. RATE, DEV, PROGRAM 04	0 - 92.07	CC/FT^2	0.93	250
• 46	REPL. RATE, FIX, PROGRAM 04	0 - 92.07	CC/FT^2	0.93	250
• 47	POWER SHARING	00 = OFF, 01/02 = ON			00
• 48	LEVEL INDIC. ON CONTROL PANEL	00 = 1, 01 = 3			01
• 49	BUSY SIGNAL, INPUT SENSORS	00 = OFF, 01 = ON			01
• 50	DAYL./REW. FILM JAM ALARM	00 = OFF, 01 = ON			00
51	LOW TEMPERATURE ALARM, FIXER	04 - 36	°F	1-2	02
• 52	OXY DEV. TIME-REPLENISHMENT	00 - 600	CC/H	20	00
• 53	OXY FIX. TIME-REPLENISHMENT	00 - 600	CC/H	20	00
54	REPL. PULSE WIDTH (TIME)	01 - 06	SEC.	1/2	01
• 55	WASH DUTY CYCLE	50 - 100	%	50	100
• 56	PROCESSOR SIZE 400 PROCESSOR 550 PROCESSOR 720 PROCESSOR 80 PROCESSOR 860 PROCESSOR 950 PROCESSOR HYBRID (SHORT RACKS) 1250 PROCESSOR HYBRID (LONG RACKS) 1550 PROCESSOR 51 PROCESSOR	01 - 10	 01 03 04 05 05 06 06 07 07 08 09	1	 **)
• 57	OXY REPLENISHMENT IN PROCES	00 = OFF, 01 = ON			01
• 59	UNITS	00 = °C - ML/M^2 01 = °F - CC/FT^2 02 = °F - CC/INCH^2			00
63	CURRENT SOFTWARE VERSION	(FOR INFO ONLY)			
64	ACTUAL TEMP., DEV-BATH	68 - 158	°F		
65	ACTUAL TEMP., FIX-BATH	68 - 158	°F		
66	ACTUAL TEMP., DRYER SECTION	68 - 158	°F		

**) Set parameter according to the current processor type.

EXPLANATION, PARAMETERS

SOFTWARE INFORMATION
When the machine is turned on, the display will first show the software edition (ex. 204 = Version 2 release 4) for a few seconds, then it shows the date for the latest revision (ex. 4591 = Week 45, 1991) and then it changes to show the default parameter as specified in PAR 00.

00 DEFAULT START-UP PARAMETER
The display shows this parameter each time the processor is turned ON.

01 REGENERATION AT LOW LEVEL
If low level is detected in one of the chemical baths, the respective pump automatically starts to reestablish the correct level.
If correct level has not been established within 20 minutes the pump stops. Check level in replenishment containers and refill if needed. Then reset the electronics by turning the processor OFF/ON on the Control Box.

02 LIGHT, DISPLAY/LAMPS, PROGRAM 01
When processing very light sensitive material, all lights in the Control Box display and daylight/rewash lamps can be turned off in Program 01.

03 MOTOR STAND-BY REST TIMER
To reduce condensation from the baths, the motor can be stopped during stand-by. But to avoid crystallization of fixer/stabilizer on the rollers it should run at least once every 20 minutes. It is possible to make the motor run idle for 1 minute at fixed intervals (2 - 20 min.). When value is 0 the motor runs constantly.

04 MODE (NORMAL OR TEST)

WARNING! SERVICE PERSONNEL ONLY.

With this parameter you are able to enter the TEST-PROGRAMS described later in this chapter.

05 STAND-BY SPEED (DEV.TIME)
The stand-by speed can be changed if necessary.

06 PROGRAM 01, 02, 03 OR 04
The different programs (dev. times and replenish rates) can either be selected on the Control Box display or with this parameter.

07 MODE (AUTO OR CONT)
The processor operates in 2 different modes: Automatic or Continuous.
In Automatic mode the processor starts up from stand-by mode when a film is entered and shortly after the film exits, the machine returns to stand-by.
In Continuous mode the machine is started up constantly.

08 FILM TRANSPORT CONTROL

CAUTION! Do not change this parameter to 01 as the processor is NOT equipped with an output sensor.

09 SERVICE PARAMETERS
If you change the status of this parameter from 00 to 01, the Level - 2 parameters (parameters not marked with a bullet in the lists) becomes available.

10 TEMP. SETTING, DEV-BATH
11 TEMP. SETTING, FIX- BATH
12 TEMP. SETTING, DRYER SECTION

NOTE! If value in PAR 13 is the same or higher than the value in PAR 12 the dryer heater will not turn on.

13 MIN. DRYER TEMP. SETTING (STAND-BY)
In stand-by the processor will keep the dryer temperature between the value set in this parameter and the value set in PAR 12.
When the dryer reaches the value set in PAR 12 is stops and starts again when temperature has dropped to the value set in PAR 13.

14 SPEED (DEV.TIME) PROGRAM 01
24 SPEED (DEV.TIME) PROGRAM 02
34 SPEED (DEV.TIME) PROGRAM 03
44 SPEED (DEV.TIME) PROGRAM 04

NOTE! The preset values of the parameters 15, 16, 25, 26, 35, 36, 45, 46 , 52 and 53 are only correctly obtained if the actual pumping volumes are known by the software.
See also explanation for PAR 17, 18, 19, 20 and 56.

15 REPL. RATE, DEV-BATH, PROGRAM 01
25 REPL. RATE, DEV-BATH, PROGRAM 02
35 REPL. RATE, DEV-BATH, PROGRAM 03
45 REPL. RATE, DEV-BATH, PROGRAM 04
See explanation for PAR 16, 26, 36 and 46.

16 REPL. RATE, FIX-BATH, PROGRAM 01
26 REPL. RATE, FIX-BATH, PROGRAM 02
36 REPL. RATE, FIX-BATH, PROGRAM 03
46 REPL. RATE, FIX-BATH, PROGRAM 04
The automatic replenishment system adds developer/activator and fixer/stabilizer to the tanks to compensate for chemicals expended during processing. On the basis of the preset dev. time and the number of input sensors activated, the electronics calculates the length of the pause periods between each pumping cycle to obtain the correct amount of replenishment. (See also PAR 54)
See “CALCULATING THE REPLENISHMENT” later in this chapter for determination of the correct replenishment settings.

17 START DEV. REPL. CALIBRATION
18 DEV. REPL. CALIBRATION VALUE
Use these parameters to calibrate the electronics to the actual pumping volume:
- Let the pump suck from a graduate containing min. 1 liter.
- Change value in PAR 17 from 00 to 01 to make the developer/activator replenishment pump run. The pump will give 20 pump cycles in 1 minute. In a cycle the pump will pump for 1 sec. and pause for 2 sec. The pump can be stopped within this period by changing value from 01 to 00.
- Check the volume of liquid pumped from the graduate and change the value in PAR 18 to this value.

19 START FIX. REPL. CALIBRATION
20 FIX. REPL. CALIBRATION VALUE
Use these parameters to calibrate the electronics to the actual pumping volume:
- Let the pump suck from a graduate containing min. 1 liter.
- Change value in PAR 19 from 00 to 01 to make the fixer/stabilizer replenishment pump run. The pump will give 20 pump cycles in 1 minute. In a cycle the pump will pump for 1 sec. and pause for 2 sec. The pump can be stopped within this period by changing value from 01 to 00.
- Check the volume of liquid pumped from the graduate and change the value in PAR 20 to this value.

21 OPEN VALVE AT LOW LEVEL
In case the wash level sensor is used as level sensor in the replenishment containers the water valve can be switch off in this parameter.

22 DISPLAY TURNAROUND
In cases where the GCB-board is placed upside down it is possible to turn around the text in the display by changing the value to 01.

23 CIRCULATION STOP
This parameter stops the circulation when input sensor is activated and the setting in % of developing time is set to > 00.
The function is off when parameter is set to 00.

47 POWER SHARING
Use this parameter to give priority to the various section heaters in order to reduce the processor's peak current.
When setting is 00 there is no power sharing.
When setting is 01 the heating of the developer/-activator and fixer/stabilizer section is given a higher priority than heating of the dryer section.
When setting is 02 the heating of the developer/-activator and fixer/stabilizer section is given a higher priority than heating of the dryer section when starting up and the heating of the developer/-activator and dryer section is given a higher priority than heating of the fixer/stabilizer section during processing.

48 LEVEL INDICATORS ON CONTROL PANEL
Select whether the control panel is equipped with 1 or 3 level indicators.

49 BUSY SIGNAL, INPUT SENSORS
With this parameter the busy signal (on X803 on GCB-board) caused by activation of the processor input sensors can be either enabled or disabled.
When disabled (PAR 49 = 00) the busy signal can still appear when caused by low level, temp. out of range etc.

CAUTION! Change of setting will influence on error signals in OnLine systems.

50 DAYL./REW. FILM JAM ALARM
When the processor is equipped with a film output sensor (mainly OnLine processors) the film jam alarm will turn on if a daylight- or rewash slot is opened by mistake.
To turn off this function set value to 01.
If value in PAR 08 is 01 the "FILM TRANSPORT CONTROL" function will still be active.

51 LOW TEMPERATURE ALARM, FIXER
Adjust this parameter to set the desired "window" for the fixer/stabilizer low temperature alarm.
Ex. If the fixer/stabilizer temperature is preset to 40°C and "window" is set to 8°C the fixer/stabilizer temperature alarm will not turn on until the temperature is below 32°C.

52 OXY DEV. TIME-REPLENISHMENT
53 OXY FIX TIME-REPLENISHMENT
The time-replenishment circuits adds chemicals to the baths in fixed intervals to retain the chemical activity and thereby the processing quality of the machine.
The circuits are activated constantly. If the value in PAR 57 is changed to 00 the circuits are only activated in stand-by periods.

54 REPL. PULSE WIDTH (TIME)
This value indicates the duration of each pumping period.

NOTE! If this value is changed the settings of the replenishment parameters might not be correctly obtained.

55 WASH DUTY CYCLE
When the setting is 50% the water solenoid valve opens just before the film enters the wash section, and in this case it only opens for 30 seconds per minute.
When the setting is 100% the valve opens when the input sensor is activated and closes when the processor returns to stand-by mode.

56 PROCESSOR SIZE 01 - 08
By varying processor sizes this value is changed to obtain the correct outputs as set in PAR 15, 16, 25, 26, 35, 36, 45, 46.

57 OXY REPLENISHMENT IN PROCESS
This parameter enables you to select whether the time-replenishment circuits (PAR 52-53) should be ON constantly or only in **stand-by** mode.

59 UNITS
Select the set of units in which you want the values to be displayed.
The EUR-setting 00 will display the values in C° and ml/m^2.
The US-setting 01 will display the values in F° and cc/ft^2.
The US-setting 02 will display the values in F° and $cc/inch^2$.

63 CURRENT SOFTWARE VERSION
Displays the current software version and is for service information only.

64 ACTUAL TEMP. DEV-BATH
65 ACTUAL TEMP. FIX-BATH
66 ACTUAL TEMP. DRYER SECTION
Display the actual temperatures in the respective sections.

DISPLAY FORMAT IN NORMAL MODE

XX – YY

Parameter XX is preset to value YY.
(Values < 100).

XX YYY

Parameter XX is preset to value YY.
(Values > 100. Values < 100 in USA-mode are displayed with 1 decimal).

XX YYY

(Flashing)
Parameter XX currently has the the value YYY.
(PAR 64, 65 and 66. Values < 100 are displayed with 1 decimal)
e.g. 43.3 is displayed 433

ml/m²	cc/ft²	Display	cc/inch²	Display	ml/m²	cc/ft²	Display	cc/inch²	Display
0	0	00	0	00	500	46.50	465	0.320	320
10	0.93	09	0.006	06	510	47.43	474	0.326	326
20	1.86	18	0.012	12	520	48.36	483	0.332	332
30	2.79	27	0.019	19	530	49.29	492	0.339	339
40	3.72	37	0.025	25	540	50.22	502	0.345	345
50	4.65	46	0.032	32	550	51.15	511	0.352	352
60	5.58	55	0.038	38	560	52.08	520	0.358	358
70	6.51	65	0.044	44	570	53.01	530	0.364	364
80	7.44	74	0.051	51	580	53.94	539	0.371	371
90	8.37	83	0.057	57	590	54.87	548	0.377	377
100	9.30	93	0.064	64	600	55.80	558	0.384	384
110	10.23	102	0.070	70	610	56.73	567	0.390	390
120	11.16	111	0.076	76	620	57.66	576	0.396	396
130	12.09	120	0.083	83	630	58.59	585	0.403	403
140	13.02	130	0.089	89	640	59.52	595	0.409	409
150	13.95	139	0.096	96	650	60.45	604	0.416	416
160	14.88	148	0.102	102	660	61.38	613	0.422	422
170	15.81	158	0.108	108	670	62.31	623	0.428	428
180	16.74	167	0.115	115	680	63.24	632	0.435	435
190	17.67	176	0.121	121	690	64.17	641	0.441	441
200	18.60	186	0.128	128	700	65.10	651	0.448	448
210	19.53	195	0.134	134	710	66.03	660	0.454	454
220	20.46	204	0.140	140	720	66.96	669	0.460	460
230	21.39	213	0.147	147	730	67.89	678	0.467	467
240	22.32	223	0.153	153	740	68.82	688	0.473	473
250	23.25	232	0.160	160	750	69.75	697	0.480	480
260	24.18	241	0.166	166	760	70.68	706	0.486	486
270	25.11	251	0.172	172	770	71.61	716	0.492	492
280	26.04	260	0.179	179	780	72.54	725	0.499	499
290	26.97	269	0.185	185	790	73.47	734	0.505	505
300	27.90	279	0.192	192	800	74.40	744	0.512	512
310	28.83	288	0.198	198	810	75.33	753	0.518	518
320	29.76	297	0.204	204	820	76.26	762	0.524	524
330	30.69	306	0.211	211	830	77.19	771	0.531	531
340	31.62	316	0.217	217	840	78.12	781	0.537	537
350	32.55	325	0.224	224	850	79.05	790	0.544	544
360	33.48	334	0.230	230	860	79.98	799	0.550	550
370	34.41	344	0.236	236	870	80.91	809	0.556	556
380	35.34	353	0.243	243	880	81.84	818	0.563	563
390	36.27	362	0.249	249	890	82.77	827	0.569	569
400	37.20	372	0.256	256	900	83.70	837	0.576	576
410	38.13	381	0.262	262	910	84.63	846	0.582	582
420	39.06	390	0.268	268	920	85.56	855	0.588	588
430	39.99	399	0.275	275	930	86.49	864	0.595	595
440	40.92	409	0.281	281	940	87.42	874	0.601	601
450	41.85	418	0.288	288	950	88.35	883	0.608	608
460	42.78	427	0.294	294	960	89.28	892	0.614	614
470	43.71	437	0.300	300	970	90.21	902	0.620	620
480	44.64	446	0.307	307	980	91.14	911	0.627	627
490	45.57	455	0.313	313	990	92.07	920	0.633	633

CALCULATING THE REPLENISHMENT

GENERAL

The processor is equipped with 2 input sensors which amongst others control the replenishment per film input.
To obtain the best possible replenishment it is important to know if one ore both of the input sensors are activated when using the most significant film width.

The recommended replenishment are typically expressed in ml/m2 processed film area. The recommendations will vary from one type of chemistry to another and from one type of film to another and in some cases it is expressed as a function of the average exposed area.

CALCULATION

Calculate the replenishment using the following formula:

$$Rs = Rr * \left(\frac{Wf}{Wp}\right) * \left(\frac{2}{IS}\right)$$

where

Rs = Replenishment set value (in ml/m^2).
Rr = Replenishment (in ml/m^2) as recommended by the supplier based on the average exposed area and chemistry and film type.
Wf = Current film width (in mm).
Wp = Processor width (in mm).
IS = Number of input sensors activated.

The calculated replenishment settings are set in the parameters 15, 16, 25, 26, 35, 36, 45 and 46.

DISPLAY OF REPLENISHMENT VALUES

The diagram opposite shows the connection between the actual replenishment values and the read out on the display.

TEST-PROGRAM

WARNING! SERVICE PERSONNEL ONLY.

The PCB GCB is equipped with a number of test-programs for servicing purposes.
See list of Sub-test programs later in this chapter.

ENTERING TEST-MODE

- Change value in PAR 09 to 01 to enter **Level - 2** parameters.
- Step back to parameter 04.
  The display will show

  04 – 00

- Enter Test-mode with the VAL-UP button.
  The display will show

  04 – 01

  and then it changes to

  – 00

  which is the Test-mode format.
- Sub-test now can be chosen with PAR-UP and PAR-DOWN buttons.

DISPLAY FORMAT IN TEST-MODE

– XX – –

Sub-test program XX not implemented.

– XX

Sub-test program XX is activated.

– XX 0

Sub-test program XX has status 0.
Output is OFF/input non-active.

– XX 1

Sub-test program XX has status 1.
Output is ON/Input active.

XX YYY

Sub-test XX shows the temperature YYY in 1/10 degrees.

LEAVING TEST MODE

- Step back to Sub-test program 00 using the PAR-DOWN button.
  The display will show

  – 00

- Exit Test-mode by pressing the VAL-DOWN button.
  The display will show

  04 – 00

- The processor is now in **Level-2** mode.
- Step forward to PAR 09 and change value to 00.
- Now the machine has returned to **Level-1** mode.

SUB-TEST PROGRAMS

NO.	DESCRIPTION	TEST OF...	DESCRIPTION
00	END TEST-PROG.		VAL-DOWN = END
01	DISPLAY TEST		VAL-UP = STEP THROUGH TEST
02	EEPROM TEST		VAL-UP = ACTIVATE TEST
03	MOTOR TEST		VAL-UP = MAX. SPEED, VAL-DOWN = MIN. SPEED
04	POWER MONIT./OFF		VAL-DOWN = POWER OFF
NOTE! DO NOT TURN DRY-HEAT (PAR 11) TO "ON" UNLESS DRY-FAN (PAR 14) IS "ON".			
11	DRY-HEAT	RELAY	VAL-UP = RELAY ON, VAL-DOWN = RELAY OFF
NOTE! DO NOT TURN FIX-HEAT (PAR 12) OG DEV-HEAT (PAR 13) TO "ON" UNLESS TANKS ARE FILLED TO CORRECT LEVEL AND CIRC-PUMP (PAR 15) IS "ON".			
12	FIX-HEAT	RELAY	VAL-UP = RELAY ON, VAL-DOWN = RELAY OFF
13	DEV-HEAT	RELAY	VAL-UP = RELAY ON, VAL-DOWN = RELAY OFF
14	DRY-FAN	RELAY	VAL-UP = RELAY ON, VAL-DOWN = RELAY OFF
15	CIRC-PUMP	RELAY	VAL-UP = RELAY ON, VAL-DOWN = RELAY OFF
16	FIX-REPL.	RELAY	VAL-UP = RELAY ON, VAL-DOWN = RELAY OFF
17	DEV-REPL.	RELAY	VAL-UP = RELAY ON, VAL-DOWN = RELAY OFF
22	WASH	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
32	SENSOR, RIGHT	INPUT	DISPLAY SHOWS STATUS 0 = OFF, 1 = ON
33	SENSOR, LEFT	INPUT	DISPLAY SHOWS STATUS 0 = OFF, 1 = ON
40	LEVEL, WASH	INPUT	DISPLAY SHOWS STATUS 0 = OK, 1 = LOW
41	LEVEL, FIX	INPUT	DISPLAY SHOWS STATUS 0 = OK, 1 = LOW
42	LEVEL, DEV	INPUT	DISPLAY SHOWS STATUS 0 = OK, 1 = LOW
50	TEMP., DEV	INPUT	DISPLAY SHOWS TEMPERATURE IN 1/10 DEGREES
51	TEMP., FIX	INPUT	DISPLAY SHOWS TEMPERATURE IN 1/10 DEGREES
52	TEMP., DRY	INPUT	DISPLAY SHOWS TEMPERATURE IN 1/10 DEGREES

THE TABLE CONTINUES ON THE NEXT PAGE.

CONTINUED

NO.	DESCRIPTION	TEST OF...	DESCRIPTION
70	GTB ON	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
71	GTB LOW FIX	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
72	GTB LOW LEVEL	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
73	GTB LOW DEV	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
74	GTB WAIT	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
75	GTB PROGRAM D	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
76	GTB PROGRAM C	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
77	GTB PROGRAM B	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
78	GTB PROGRAM A	OUTPUT	VAL-UP = OUTPUT ON, VAL-DOWN = OUTPUT OFF
79	GTB FIX-BUTTON	INPUT	DISPLAY SHOWS STATUS 0 = “OFF”, 1 = ON
80	GTB DEV-BUTTON	INPUT	DISPLAY SHOWS STATUS 0 = “OFF”, 1 = ON
81	GTB PRG-BUTTON	INPUT	DISPLAY SHOWS STATUS 0 = “OFF”, 1 = ON

ADJUSTING OF THE PCB GCB

NOTE! SERVICE TECHNICIANS ONLY.

If the PCB GCB is replaced with an other, some adjustments have to be made to adapt the new electronics to the conditions of the processor.

See the figure below.

- All parameters and values are displayed on the digital display.
- Step to **PAR 14, 24, 34** or **44** using the **PAR UP/PAR DOWN** buttons.
- Set value to max. speed (min. dev. time) (**15** sec.) using the **VAL UP/VAL DOWN** buttons.
- Feed film through the processor to check the film speed and adjust on the potentiometer **R303**. Check with another film.
- In the same parameter set value to min. speed (max. dev. time) (**60** sec.). Adjust on potentiometer **R302**. Check speed as for max.speed.
- Check max. speed again.
- Insert an accurate thermometer in developer bath. Step to **PAR 64** (Actual temp., developer). On the display the actual temperature is displayed i 1/10 °C, ex. 25.4°C is displayed as 254.
  Adjust value on display to thermometer read out using potentiometer **R4**.
- Step to **PAR 65** (Actual temp., fixer). Repeat procedure as for developer using potentiometer **R16**.
- Step to **PAR 66** (Actual temp., dryer section). Repeat procedure as for developer and fixer using potentiometer **R28**.

NOTE! The potentiometer R40 is for adjustment of wash water temperature and is not in use.

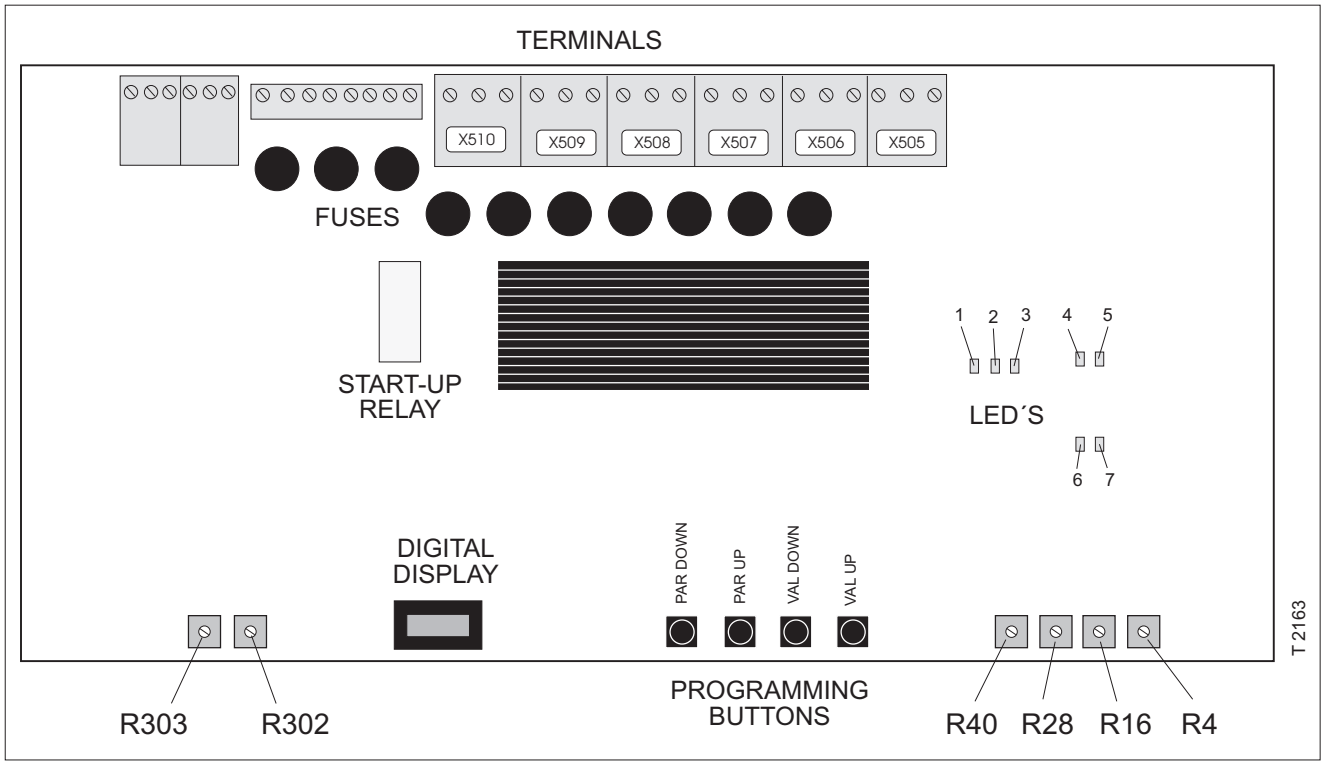


Fig. 9/1 PCB GCB

LED DESCRIPTION

The PCB GCB is equipped with 7 LED's (see the figure opposite).
The LED's indicate the following situations:

1 Low level, WASH (not in use).
2 Low level, FIX.
3 Low level, DEV.
4 Rewash lid open (only in use on processors with rewash lid).
5 Daylight lid open (only in use on processors with daylight lid).
6 Left input sensor activated.
7 Right input sensor activated.

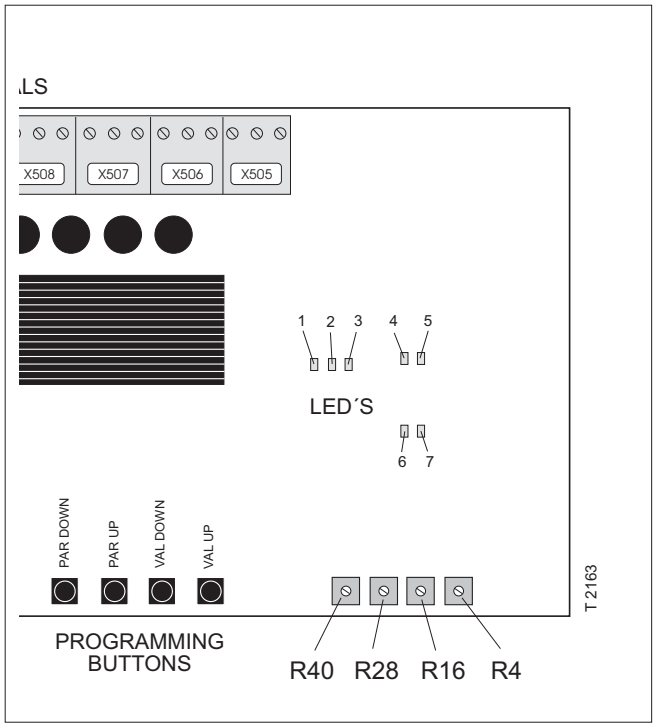
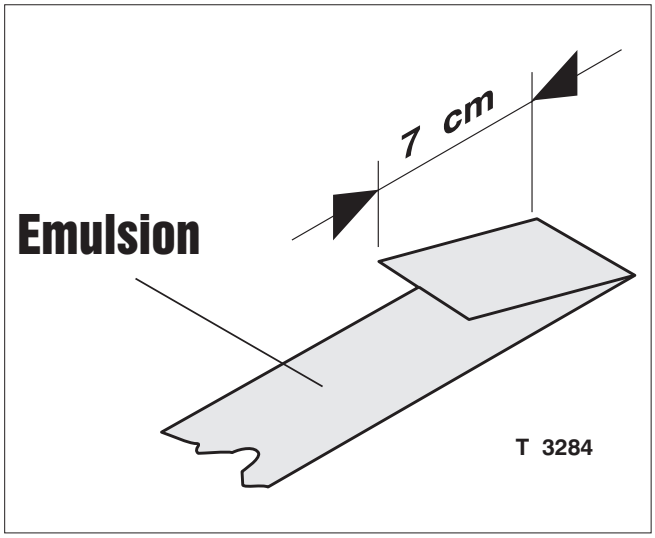


Fig. 9/2 LED's on PCB GCB

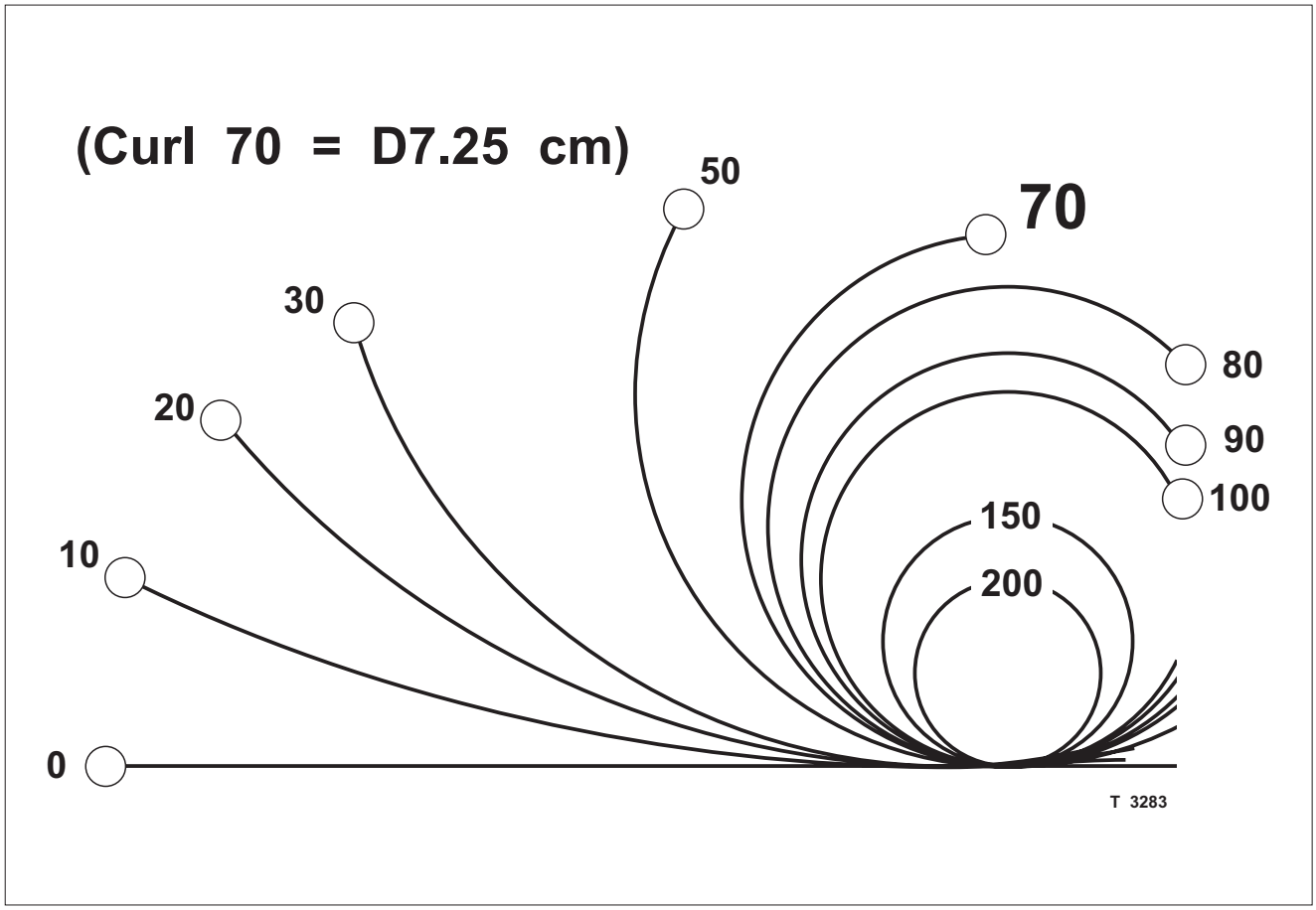
CURL-TEST

The Film Processor 400 is capable of processing film or paper with a curl up to 70.



TEST METHOD

- Cut off 50 cm of film/paper directly from the supply roll.
- Let it make a natural curl.
- Place the test-piece on the end on top of the curves in the figure opposite for comparison.
- Film or paper with a curl larger than 70 must have a bend as shown in the figure below.



APPENDIX A

ADDITIONAL INFORMATION FOR THIS PROCESSOR

400/15

In this appendix is specified additional information covering the processor models mentioned above.

Parts delivered ...
are specified on a packing list delivered with the processor.

Installation kit ...
is delivered with the processor in a cardboard box. The kit consists of different parts needed for the installation. The parts are specified on a separate list included.

Spareparts kit ...
is delivered in a small red box. Inside is a label with list of enclosed spareparts, numbers of each sparepart and sparepart order numbers.

Make sure that all parts are present and in good condition.

ORDERING SPAREPARTS

Some of the spareparts shown on the iso-metric drawings in chapter 8 have no sparepart number and specification. The sparepart numbers and specification for those parts are listed below. The page and position numbers refer to the page and position numbers used in chapter 8.
Please also refer to the iso-metric drawings in chapter 8.

When ordering spareparts please state carefully the sparepart number, the specification and the number of items wanted. Send your order to your local dealer.

Pos.No	Part No	Specification	
Page 8/3:			
1	19221	CLOSED STAND, COMPLETE	***OPTIONAL***
2	***18861***	***FEED TABLE***	***IF FEED TABLE***
3	19220	DAYLIGHT CASSETTE, COMPLETE	***IF DAYL.CASS.***
4	***20586***	***FILM BASKET***	
7	***11555***	***COVER, DRYER SECTION***	
8	***11554***	***COVER, TOP, WET SECTIONS***	
9	***13520***	***COVER, LID, DRYER***	
16	***11556***	***CASSETTE, TOP***	***IF DAYL.CASS.***
Page 8/5:			
	12465	STAND, OPEN, COMPLETE	***IF OPEN STAND***
1	20611	PROFILE, SHORT	***IF OPEN STAND***
2	***20612***	***PROFILE, LONG***	***IF OPEN STAND***
3	***20610***	***LEG, STAND***	***IF OPEN STAND***
Page 8/7			
1	***20607***	***SUSPENSION, STAND***	***IF CL. STAND***
5	20603	PANEL, FRONT/REAR	***IF CL. STAND***
6	20603	PANEL, FRONT/REAR	***IF CL. STAND***
7	20605	PANEL, UPPER, RIGHT	***IF CL. STAND***
8	20606	PANEL, LOWER, RIGHT	***IF CL. STAND***

Continues next page

Pos.No	Part No	Specification	
Page 8/7, continued:			
9	20604	PANEL, LEFT	***IF CL. STAND***
10	***19222***	***TROLLEY, COMPLETE***	***OPTIONAL***
Page 8/11:			
44	18858	CONTROL BOX, COMPLETE	
46	16829	FRONT PANEL W/PLUG	
Page 8/27:			
13	12463	FRONT, EL-CABINET	
23	43481	CABLE, GFCI 15A, COMPLETE	***USA ONLY!***

ADDITIONAL SPECIFICATIONS

WEIGHT

Standard version with closed stand.

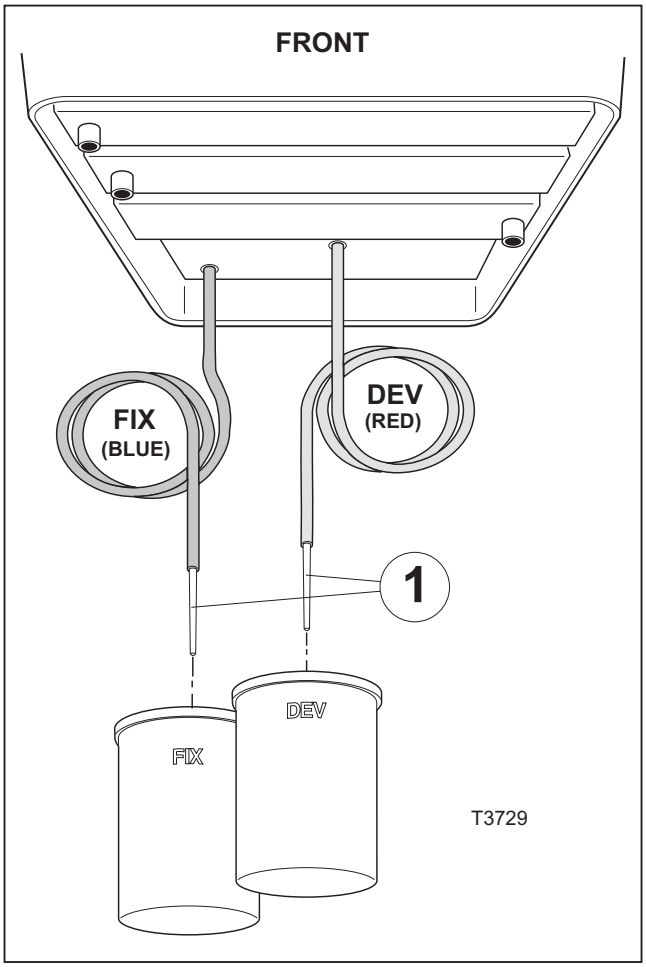
Empty:	67 kg	(148 lb)
With chemicals:	102 kg	(225 lb)
Shipping:	99 kg	(218 lb)
Closed stand:	25 kg	(57 lbs.)
Open stand:	9 kg	(19 lbs.)

REPLENISHMENT HOSES

The replenishment hoses are located underneath the machine (see fig.).

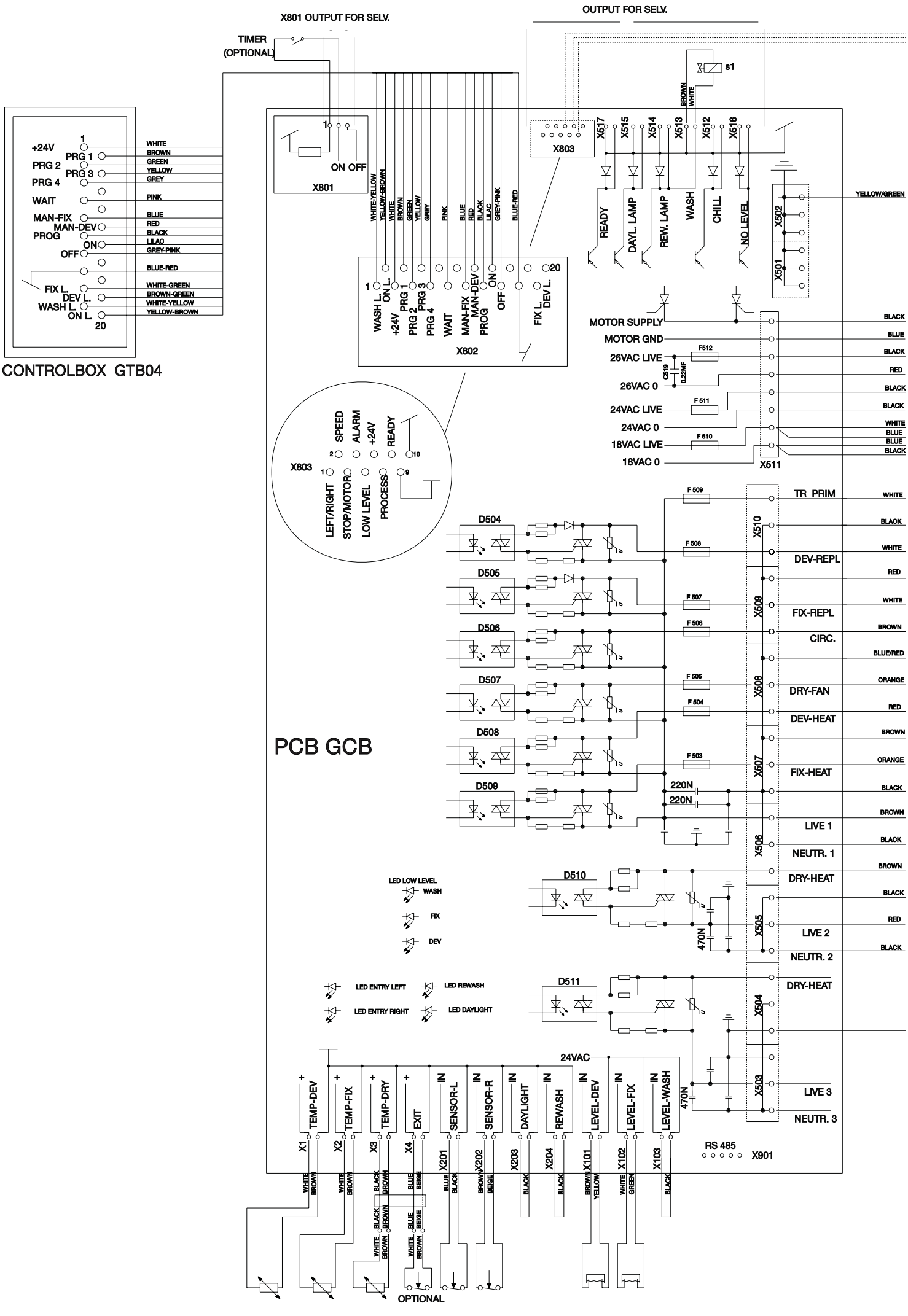
Insert the suction tubes **(1)** into the hoses and connect the hoses to the replenishment containers as shown:

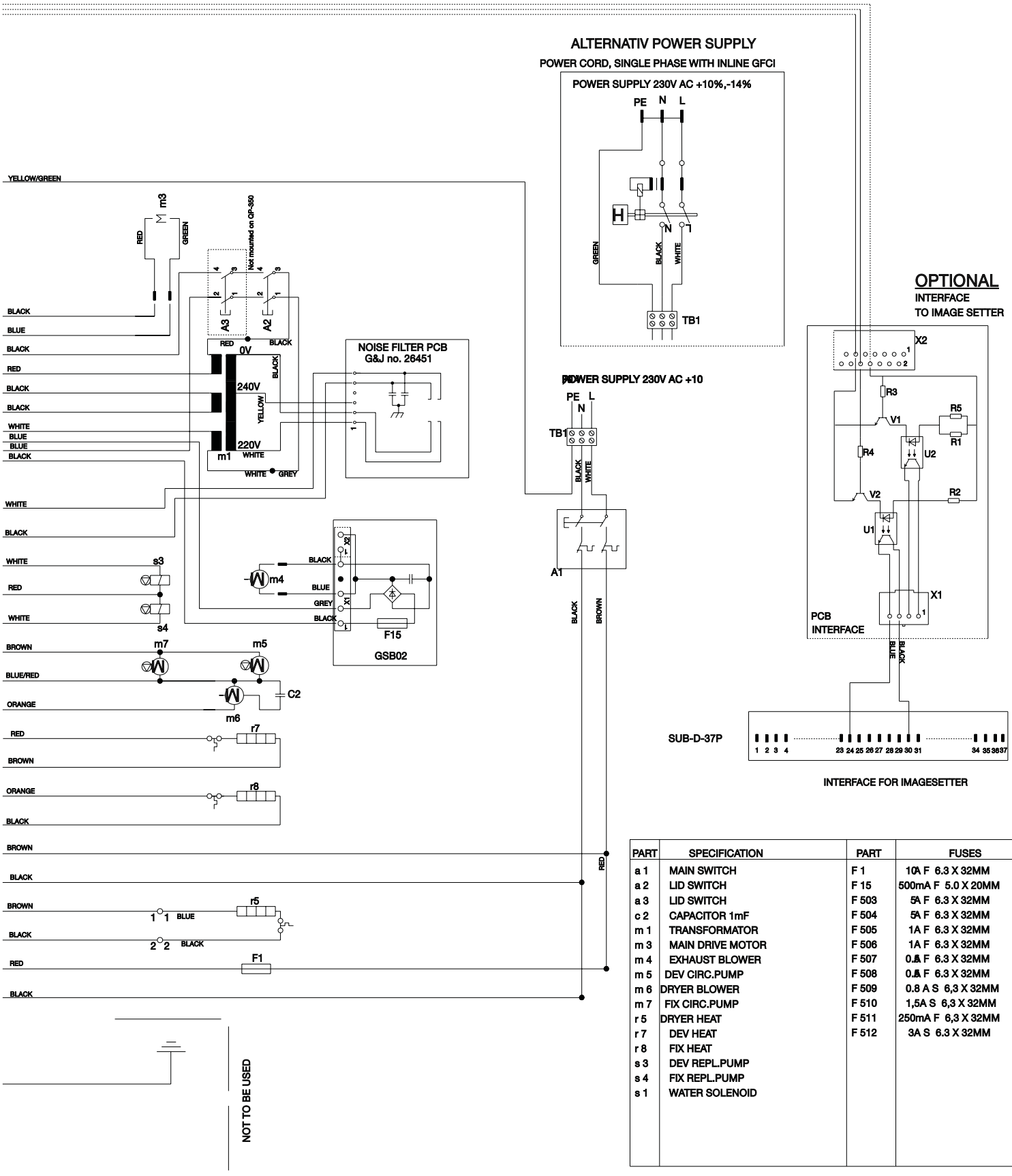
RED HOSE TO DEVELOPER.
BLUE HOSE TO FIXER.



ELECTRICAL DIAGRAM

The electrical diagram for the processor is on next page.


X801 OUTPUT FOR SELV.
OUTPUT FOR SELV.
TIMER
(OPTIONAL)
ON OFF
X801
X803
X802
s1
BROWN
WHITE
X517
X515
X514
X513
X512
X516
READY
DAYL. LAMP
REW. LAMP
WASH
CHILL
NO LEVEL
X502
X501
YELLOW/GREEN
WHITE-YELLOW
YELLOW-BROWN
WHITE
BROWN
GREEN
YELLOW
GREY
PINK
BLUE
RED
BLACK
LILAC
GREY-PINK
BLUE-RED
WASH L.
ON L.
+24V
PRG 1
PRG 2
PRG 3
PRG 4
WAIT
MAN-FIX
MAN-DEV
PROG
ON
OFF
FIX L.
DEV L.
MOTOR SUPPLY
MOTOR GND
26VAC LIVE
26VAC 0
24VAC LIVE
24VAC 0
18VAC LIVE
18VAC 0
F512
C519
0.22MF
F 511
F 510
X511
CONTROLBOX GTB04
+24V
PRG 1
PRG 2
PRG 3
PRG 4
WAIT
MAN-FIX
MAN-DEV
PROG
ON
OFF
FIX L.
DEV L.
WASH L.
ON L.
WHITE
BROWN
GREEN
YELLOW
GREY
PINK
BLUE
RED
BLACK
LILAC
GREY-PINK
BLUE-RED
WHITE-GREEN
BROWN-GREEN
WHITE-YELLOW
YELLOW-BROWN
X803
SPEED
ALARM
+24V
READY
LEFT/RIGHT
STOP/MOTOR
LOW LEVEL
PROCESS
PCB GCB
D504
D505
D506
D507
D508
D509
F 509
F 508
F 507
F 506
F 505
F 504
F 503
220N
220N
X510
X509
X508
X507
X506
TR PRIM
DEV-REPL
FIX-REPL
CIRC.
DRY-FAN
DEV-HEAT
FIX-HEAT
LIVE 1
NEUTR. 1
WHITE
BLACK
WHITE
RED
WHITE
BROWN
BLUE/RED
ORANGE
RED
BROWN
ORANGE
BLACK
BROWN
BLACK
LED LOW LEVEL
WASH
FIX
DEV
D510
470N
X505
DRY-HEAT
LIVE 2
NEUTR. 2
BROWN
BLACK
RED
BLACK
LED ENTRY LEFT
LED ENTRY RIGHT
LED REWASH
LED DAYLIGHT
D511
X504
DRY-HEAT
24VAC
470N
X503
LIVE 3
NEUTR. 3
+
TEMP-DEV
TEMP-FIX
TEMP-DRY
EXIT
IN
SENSOR-L
SENSOR-R
DAYLIGHT
REWASH
LEVEL-DEV
LEVEL-FIX
LEVEL-WASH
X1
X2
X3
X4
X201
X202
X203
X204
X101
X102
X103
RS 485
X901
WHITE
BROWN
BLACK
BROWN
BLUE
BEIGE
BLUE
BLACK
BROWN
BEIGE
BLACK
BLACK
BROWN
YELLOW
WHITE
GREEN
BLACK
OPTIONAL



PART	SPECIFICATION	PART	FUSES
a 1	MAIN SWITCH	F 1	10A F 6.3 X 32MM
a 2	LID SWITCH	F 15	500mA F 5.0 X 20MM
a 3	LID SWITCH	F 503	5A F 6.3 X 32MM
c 2	CAPACITOR 1mF	F 504	5A F 6.3 X 32MM
m 1	TRANSFORMATOR	F 505	1A F 6.3 X 32MM
m 3	MAIN DRIVE MOTOR	F 506	1A F 6.3 X 32MM
m 4	EXHAUST BLOWER	F 507	0.5A F 6.3 X 32MM
m 5	DEV CIRC.PUMP	F 508	0.5A F 6.3 X 32MM
m 6	DRYER BLOWER	F 509	0.8 A S 6,3 X 32MM
m 7	FIX CIRC.PUMP	F 510	1,5A S 6,3 X 32MM
r 5	DRYER HEAT	F 511	250mA F 6,3 X 32MM
r 7	DEV HEAT	F 512	3A S 6.3 X 32MM
r 8	FIX HEAT		
s 3	DEV REPL.PUMP		
s 4	FIX REPL.PUMP		
s 1	WATER SOLENOID		

Electrical Diagram
11357R
08032001