Gold Line On-Line Engelsk

Gold Line Processors Table of Contents

1.1 Topics Covered

This manual provides installation, operation, maintenance, and replacement parts information for the series of Gold Line processors prepared for On-Line. Figure 1-A shows a typical procesor (GL 281 Off-Line).
Special versions of GL processors for on-line processing from exposure units (scanners, etc.), and Lith processors are covered in special manuals or sections.

Fig. 1-A

1.2 Processor Description

General: The GL processors are high volume, easy to use, three-bath, replenishment processors. The GL processors are ideal for Rapid Access processes, Contact and Line work as well as for photo-typesetting. Among the range of possible film types and applications, we can mention contact work, camera work, scanner work, laser or conventional, photo-typesetting, and camera projections.

Standard Accessories: Replenishment containers for dev. and fix., customer spare parts kit (assortment of gears, bearings, etc.). Features include; chemical replenishment (automatic and manual) with recirculation, variable speed control, separate developer and fixer temperature controls, automatic monitoring of chemical levels, automatic anti-oxidation programme (AOX), built-in exhaust blower, standard plumbing, and a built-in dryer that delivers completely dry output.

Optional Accessories: For two-room installation in a darkroom wall a set of darkroom panels can be supplied on order. For use with two-room installations also a top feed from outside the darkroom into the developer rack and a rewash feed into the wash rack can be supplied (28" and wider).
For these extras an additional control unit to start manual replenish and monitor the status of the processor from outside the darkroom is supplied.
If the daylight inlet to the developer rack is to be used intensively, an optional photocell for this inlet will start and stop, and replenish automatically.
An standard daylight lid accepts various sized cassettes and allows processing in normal room lighting (using a take-up cassette), thus eliminating the need for a darkroom.

Chemical Solutions: The processor will process a wide range of Rapid Access and RALI (Rapid Access Lith) chemicals such as Kodak Ultratec, Agfastar, Typon Typotec, Fuji Grandex, etc. Always check with the supplier of developer, fixer and film (paper) that the materials used are compatible.

Replenishment And Recirculation: Two individual replenishment pumps add fresh chemistry (either automatically or manually) to the exhausted chemistry. As the replenishment takes place, the excess exhausted chemistry drains into holding containers. The replenishment chemistry is drawn up by replenishment pumps and recirculated by the recirculating pumps, when the relays of the two individual replenishment pumps are activated, ensuring thorough mixing. This produces a consistent density throughout the sheet or galley being processed, regardless of its length, and reduces chemical build-up on the rollers.

Material Path: The Gold Line series of processors features four sizes of input width: 43 cm (17"), 71 cm (28"), 91cm (36"), 135 cm (54"). Processors in each input width come in two different tank sizes/path lengths: 44 cm for medium capacity or 67 cm for high capacity film processing. For extra high capacity phototypesetting processing an extra deep tank version with 90 cm path length is available in 43 cm width. The transport system of the Gold Line processors has proven to give a very safe transport.

Night Mode: The night mode heats up the chemistry in the processor's first two stations and maintains it at an operator-set temperature. This mode also: ensures that the chemistry does not oxidize or drop to a low level; circulates all chemical fumes; and de-activates the transport system. This mode will automatically turn the heaters, recirculating pumps, and replenishment pumps on and off as needed. The built-in exhaust blower will always be ON. The night mode extends the life of the chemistry, reduces wear on the system's components, and saves energy. (The daylight lid should always be left open in night mode).

Stand-by Mode: The stand-by mode operates exactly as the night mode. The only difference is that the dryer's upper heaters are on and the processor's transport system can be activated by the presence of paper or film. This mode also extends the life of the chemistry, reduces wear on the system's components, and saves energy. The daylight lid should always be left open in stand-by mode.

Process Mode: The process mode will only operate with the presence of paper or film. When either paper or film is inserted into the processor, a sensor is activated and the recirculating pumps, plumbing valve, transport rollers, and both dryer heaters with fans all turn on. The processor will remain in this mode until the material exits the dryer, at which time the processor will automatically return to the stand-by mode.

Solution Temperatures: The first two stations are separately maintained at the operator-set temperature by two efficient heaters in line with the recirculation pumps. The heaters are monitored and controlled by two temperature sensors which turn the heaters on and off as required. The temperatures of each station can be displayed, at any given time, by the toggling of the temperature display switch.

Roller Drive/Transport Speed: The three roller assemblies and dryer rollers are driven by an operator-controlled variable speed DC motor, drive shaft, gears, and a series of sprockets. The transport system will only function in the operating mode. NOTE: The transport system will not operate if a low level of chemistry is present or if the processor is in night mode.

Pumps: The processors is equipped with 3 pumps. The pumps circulate the developer and fixer chemistry with its own tank (bath). Their pumping rate is preset at the factory and requires no operator adjustments. The circulation of the water (in the wash station) is controlled

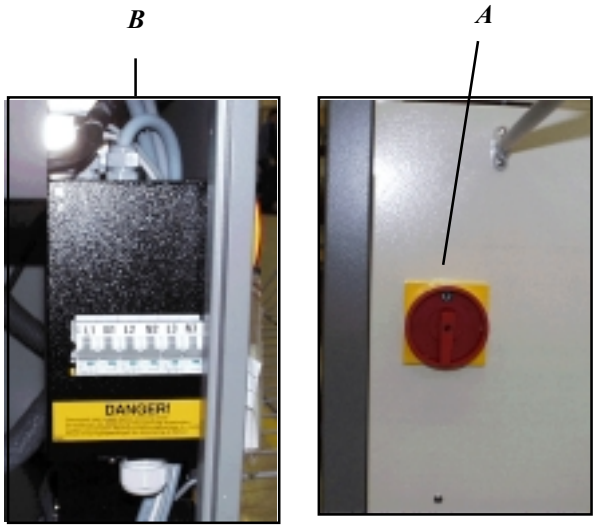


Fig. 1-C

by the water valve when connected to the Wash Treatment (WT40/80) or, if applicable (local environmental codes allow), the water pressure in your building and one circulation pump.

AOX: The anti-oxidation programme (AOX) automatically replenishes the chemistry every 20 minutes in both the night and operate mode. AOX is reset back to zero minutes each time material is processed. For example: if material is processed every 19 minutes no AOX will ever occur, however, if material is processed every 21 minutes AOX will occur every 20 minutes. This not only keeps fresh chemistry in the tanks but also helps eliminate a low tank level condition. With every AOX signal the drive runs for a few secons to prevent that the rollers sticks together.

A. Power On/Off Switch - The power ON/ OFF switch controls the main power to the processor. Any time the power switch is turned OFF for an extended time the top cover should be lifted so that chemical moisture does not accumulate. The power switch should always be turned OFF and the top cover liftet at the end of each work day. The power switch is located at the rear of the maschine.

B. Main Fuse - These 16 Amp. 220 volts Aut fuses protects the processor from a possible power surge or a short circuit (See IMPORT-ANT).The main fuses is accesible from the left side of the mashine when the side cover is removed.

IMPORTANT

When a fuse has failed, try to reset the fuses. If the fuse fails again immediately remove power from the system by unplugging the power cord and contact a qualified service representative to inspect the system.

C. Developer Temperature Adjustment - The temperature control sets and maintains the temperature of the chemistry in the developer station from a range of 25°C to 45°C (77° to 113°F). The temperature should be set to the recommended setting for the chemistry/media being used. Refer to chemical and film supplier's information or the table in paragraph 4.3 for the recommended temperature settings.

d. **Water Feed** - Fresh water enters the tank here, whenever processing takes place, or in a low level situation. Fig 1-E.

e. **Temperature Probe** - This probe (submerged in the chemistry) senses and controls the temperature of the chemistry through the interface box and temperature PCB. When the temperature reaches its setting, the probe sends a signal to shut down the heater. The probe also has the ability to display the current chemical temperature. The wash station does not require a temperature probe. Fig. 1-E.

f. **Chilling Tube** - This tube chills the developer to stabilize temperature. Fig. 1-E.

g. **Overflow Pipe** - As replenishment occurs the exhausted chemistry is drained through the overflow pipe, thus keeping the chemistry at a prescribed level. The chemical levels are adjustable by the adjustable overflow piece on top of the overflow. Fig. 1-F.

h. **Low Level Sensors** - If the chemistry level falls below these three sensors, the heat and the transport drive will not operate. Also, a number indicating which tank is low will be displayed. Fig. 1-F.

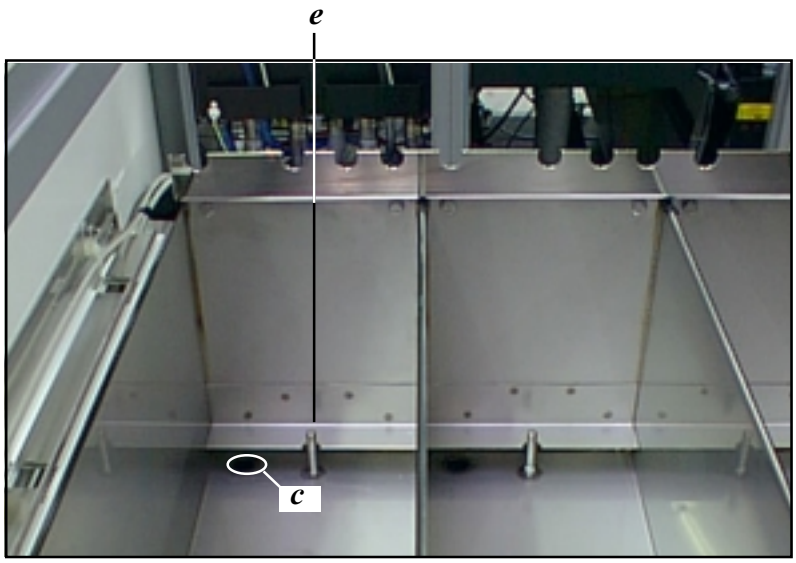


Fig. 1-E

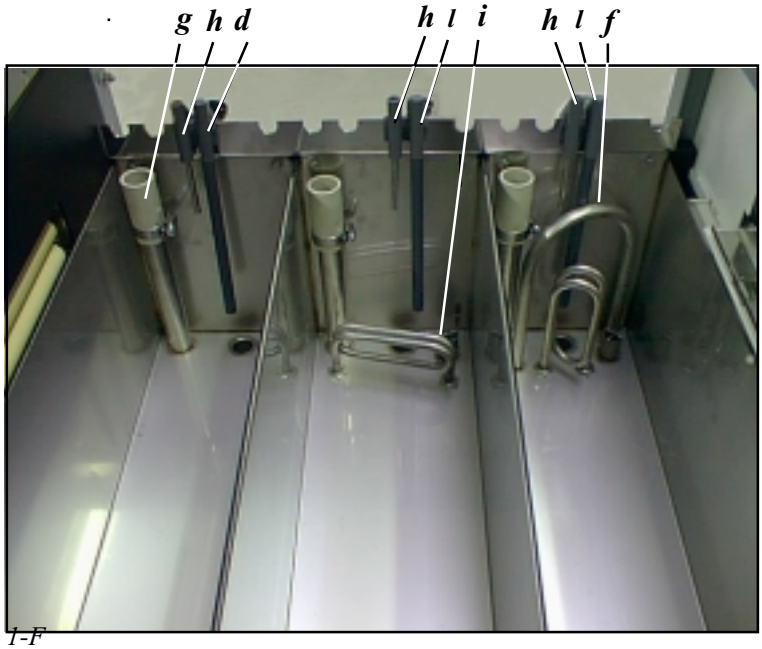


Fig. 1-F

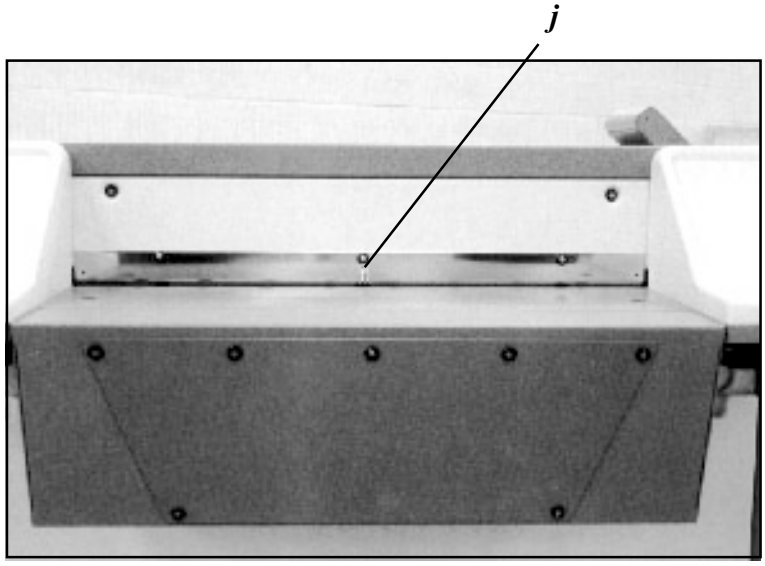


Fig. 1-G

i. **Heating Element** - Heats the chemistry to the operator-set temperature. The wash station does not require a heating element. A safety thermostat will act directly on the heating element in case of failure in other systems. Fig. 1-F.

j. **Media Feed Sensors** - When material is fed into the processor the sensors turn on the no-feed light (only in offline position), circulating pumps, transport system, dryer, and auto replenishment. Fig. 1-G.

k. **Blower Channel (Horizontal Dryer)** - There are two blower channels, one under and one over the dryer rack, which blow hot air on the dryer rack rollers and on the film.
Each of the two blower channels (inter-changeable) consists of either 3 (17"+28"), 4 (36") or 5 (54") axial blowers and either 3 (17"+28"), 4 (36") or 5 (54") heating elements with safety thermostats. Fig. 1-H.

k.1 **Dryer tank/Blower Channel (Vertical Dryer)** - In GL 172, 173 and 282 a vertical dryer rack is utilized. After the wash rack the film passes a short horizontal predryer rack before it enters the dryer rack. In the vertical dryer rack the film travels down and up as in the developer rack. From the dryer blower and heating element hot air is distributed on both sides of the film by channels in the dryer tank. Fig. 1-I.

l. **Replenishment Feed -** When replenishment takes place fresh chemistry enters the tanks here.

1.3 To Order Accessories and Supplies

Contact your dealer for accessories, supplies, technical service, and spare parts.

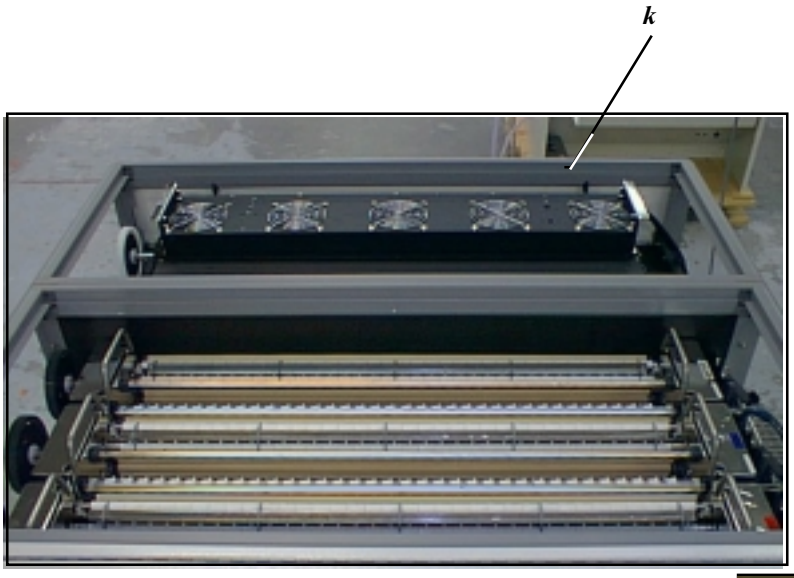


Fig. 1-H

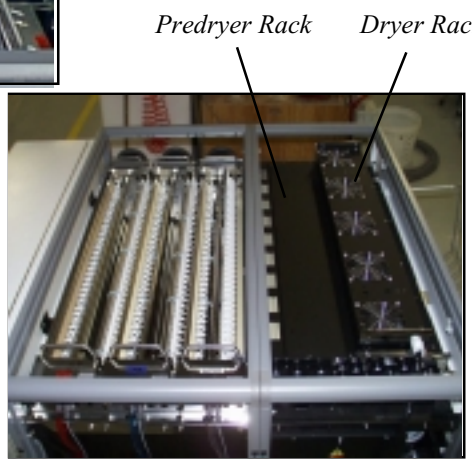


Fig. 1-I

1.3 Specifications*

The processor specifications are listed in Table 1A + 1B.

Table 1A

Technical Specifications

	GL 171	GL 291	GL 361	GL 541
Dimensions of machine:				
Lenght:	1760 mm/69.3"			
Width:	840 mm/33.1"	1100 mm/43.3"	1305 mm/51.4"	1765 mm/69.5"
Height	1100 mm/43.3"			
Shipping dimensions:				
Length:	182 cm/71.7"	191 cm/75.2"	182 cm/71.7"	191 cm/75.2"
Width:	103 cm/40.6"	133 cm/52.4"	179 cm/70.5"	185 cm/72.8"
Height:	133 cm/52.4"			
Weight:				
Kg net:	248 kg	304 kg	339 kg	410 kg
Kg gross:	340 kg	410 kg	465 kg	560 kg
Specifications:				
Inlet width:	43 cm/17"	73 cm/29"	91 cm/36"	135 cm/54"
Tank capacity (rack mounted):	19 l/5.0 gal.	25 l/6.6 gal.	33 l/8.7 gal.	45 l/11.9 gal.
Rack length:	44 cm/17.3"			
Developing time min.-max.:	15-120 sec.			
Speed at 30 sec. dev. time:	88 cm (34.7")/min.			
Max. film length:	100 m/3937"	10 m/393.7"	8 m/315"	8 m/315"
Min. film size:	5 x 13 cm /2 x 5.1"			
Dev./fix. temperature range:	20-45°C/68-113°F			
Exhaust blower	Built in			
Exhaust connection:	Ø 100 mm/4"			
Circulation rate dev./fix./wash:	22 l /5.8 gal.)/min.			
Water consumption:	3.5 l (0.9 gal.)/min.			
Emission of heat to room (operate):	2000 W	2300 W	3000 W	3300 W
Water connection:	3/4" Thread			
Drain connection:	3 x 1"			
Replenishment containers:	Dev. 25 l/6.6 gal. Fix. 25 l/6.6 gal.			
Max. power consumption:	5600 VA	5600 VA	7900 VA	7900 VA
Average power consumption:				
Power save:	2000 W	2000 W	3500 W	3500 W
Night mode:	900 W	1000 W	1100 W	1200 W
Power supply:	(1 x 220 V ± 10%/50 Hz, on request)			
	(2 x 115 V + 10%/-0%/50 Hz, on request)			
	2 x 220 V ± 10%/50 Hz			
	3 x 220/380 V ± 10% /50 Hz			
	(60 Hz on request)			

* Specifications are subject to change without notice.

Table 1B

Technical Specifications

	GL 172	GL 292	GL 362	GL 542
Dimensions of machine:				
Lenght:	1760 mm/69.3"			
Width:	840 mm/33.1"	1100 mm/43.3"	1305 mm/51.4"	1765 mm/69.5"
Height	1100 mm/43.3"			
Shipping dimensions:				
Length:	191 cm/75.2"	182 cm/71.7"	182 cm/71.7"	191 cm/75.2"
Width:	133 cm/52.4"	179 cm/70.5"	179 cm/70.5"	185 cm/72.8"
Height:	133 cm/52.4"			
Weight:				
Kg net:	263 kg	325 kg	375 kg	467 kg
Kg gross:	370 kg	450 kg	500 kg	615 kg
Specifications:				
Inlet width:	43 cm/17"	73 cm/29"	91 cm/36"	135 cm/54"
Tank capacity (rack mounted):	27 l/7.1 gal.	39 l/10.3 gal.	50 l/13.2 gal.	66 l/17.4 gal.
Rack length:	67 cm/26.4"			
Developing time min.-max.:	15-120 sec.			
Speed at 30 sec. dev. time:	134 cm (52.8")/min.			
Max. film length:	100 m/3937"	10 m/393.7"	8 m/315"	8 m/315"
Min. film size:	5 x 13 cm /2 x 5.1"			
Dev./fix. temperature range:	20-45°C/68-113°F			
Exhaust blower	Built in			
Exhaust connection:	Ø 100 mm/4"			
Circulation rate dev./fix./wash:	22 l (5.8 gal.)/min.			
Water consumption:	3.5 l (0.92 gal.)/min.			
Emission of heat to room (operate):	2100 W	2400 W	3100 W	3400 W
Water connection:	3/4" Thread			
Drain connection:	3 x 1"			
Replenishment containers:	Dev. 25 l/6.6 gal. Fix. 25 l/6.6 gal.			
Max. power consumption:	5600 VA	5600 VA	7900 VA	7900 VA
Average power consumption:				
Power save:	2100 W	2100 W	3600 W	3600 W
Night mode:	1000 W	1100 W	1200 W	1300 W
Power supply:	(1 x 220 V ± 10%/50 Hz, on request)			
	(2 x 115 V + 10%/-0%/50 Hz, on request)			
	2 x 220 V ± 10%/50 Hz			
	3 x 220/380 V ± 10% /50 Hz			
	(60 Hz on request)			

* Specifications are subject to change without notice.

2.1 Machine Operation

Never allow loose clothing or jewelry to come close to the gear train, media transport area, an electrical connection, or any terminal block.
Service work that must be performed while the processor is operating or that necessitates removing the processor's panels should be performed only by qualified service technicians. The main power to the processor must be turned off and the main switch locked by a padlock before panels are removed by anyone but trained service personnel.

Warning:
When the processor is in stand-by mode it will periodically start up, run and then shut down. The machine must be turned off before servicing drive motor and gear train dryer compartment, and electrical components.

2.2 Electrical and Mechanical Hazards

Follow safety precautions to minimize the risk of electrical shock, burns, and equipment damage when operating any equipment. Photographic processing machines are mechanically and electrically complex and contain volumes of chemicals, for which reason extreme caution is required.
Periodical check of all wiring for loose connections and worn or frayed insulation. To prevent accidents, check mechanical parts for loose hardware and broken parts.
The risk of receiving electrical shock is reduced by removing all jewelry while servicing equipment. Turn off and lock the main switch by a padlock before making repairs. Make sure the processor has good electrical grounding.

2.3 Fire Prevention

The area around the processor must be kept clean. Keep dust, wood shavings, paper cuttings, and waste materials out of the dryer compartment. Do not remove dryer blower channel from an operating processor.
In the room where the processor is operated and where paper and chemicals are stored fire extinquishers must be available.

2.4 Chemical Hazards and Handling

Misuse of almost any chemical may create a hazard of some type. Generally, photochemicals are no more hazardous than many common cleaning products, however there is still a risk of danger. When handling and storing chemicals follow the precautions and procedures below.

a. Never sniff a container or open bottle to determine its contents. A cautious sniff of the cap or lid is safer.

b. When needed, wear protective clothing and equipment. Wear safety goggles when servicing equipment, and rubber gloves when handling chemicals.

c. Label storage containers properly. Avoid storing hazardous chemical on high shelves or in unprotected glass containers. Keep chemicals away from children. Do not store chemicals in a refrigerator used for food because they may contaminate food or be mistaken for edibles.

d. Ensure proper ventilation in the area where chemicals are being used or stored.

e. Observe the manufacturer's recommendations for using and mixing chemicals.

WARNING:
Overexposure to photographic chemistry may cause skin irritation to certain individuals.

PHOTOGRAPHIC CHEMISTRY EMERGENCY AND FIRST AID PROCEDURES:

- SKIN - Flush thoroughly with water.
- EYES - Flush thoroughly with water and consult a physician.
- INGESTION - Consult a physisian immediately.

2.5 Chemical Disposal

Photographic processing wastes normally contain diluted chemicals. These chemicals should be collected and disposed of in accordance with local environmental codes. Dumping chemicals into a drain system could lead to a pollution problem. Contact local water treatment and sewer district authorities before disposing of chemical solutions.

2.6 Exhaust, Temperature, and Humidity

It is important to establish correct exhaust to obtain troublefree processing. Make sure that the exhaust hose from the built-in exhaust blower in the processor is properly connected to the stud on the rear end below the receiwing basket, fig. 2-A. The built-in exhaust removes chemical fumes from processor and installation site. Chemical fumes are corrosive, and if the processor is switched off at night, the wet section top cover must be opened to ventilate condensation, or order an external exhaust blower (our order no. 250199) with separate power connection which cannot be switched off.

Room temperatures between 18-26°C (65-80°F) with a relative humidity between 35% and 75% are ideal for photographic processing and comfortable working conditions.

Fig. 2-A

The specific sequence of tasks necessary to accomplish the installation of the processor are listed in the table below.

Table 3A
Processor Installation Sequence

Paragraph	Description
3.1	Pre-Installation Environmental*
3.2.	Pre-Installation Electrical*
3.3	When Shipment Arrives**
3.4	Pre-Installation Verification**
3.5	Set-Up and Operational Verification

* The customer is responsible for these tasks.
** The customer may be responsible (and so noted) for certain tasks in this paragraph.

3.1 Pre-Installation Environmental
(Customer Responsibility)

Ambient Conditions: The processor's operation area should be dust free and maintained at a controlled temperature and humidity. This will help ensure that the best possible output is achieved. The processor's recommended temperature and humidity ranges are: Temperature (see NOTE): 18° to 26°C (65° to 80°F). Humidity: 35 to 75%, non-condensing.

NOTE:
Temperature will affect the quality of the copy. If the temperature is consistently out of the specified range, the operator should take appropriate action to provide either heating or cooling of the processor's environment, until the ideal ambient temperature range is achieved and remains constant.

Physical Location: The processor should be placed on a floor that is uniform enough for leveling, and sturdy enough to accommodate the weight without movement. The floor should have a hard surface that is easy to clean, e.g. concrete, linoleum, vinyl or hard wood. Do not use carpets near the processor as spilled chemicals will be difficult to remove. Consider installing the processor on a floor drip tray.
A connection for the air from the built-in exhaust fan should be available to be connected to the processor with max. 6 m of ø 100 mm tube. The exhaust fumes are corrosive and should be ventilated out of the building.
There should be a sufficient working area around the processor to allow the operator or a service engineer accessibility for cleaning, preventative maintenance, or (if necessary) repair. Allow at least 60 cm of working space on all sides of the processor (Fig. 3-A), and the electrical outlet and switch should be placed near the machine on the outside of the darkroom wall.
In a two-room installation the water supply and outlet should be placed on the inside of an darkroom wall, if possible. When the processor is fully plumbed, the wash inlet and drain hoses must be straight (no bends in the hoses) when in use.

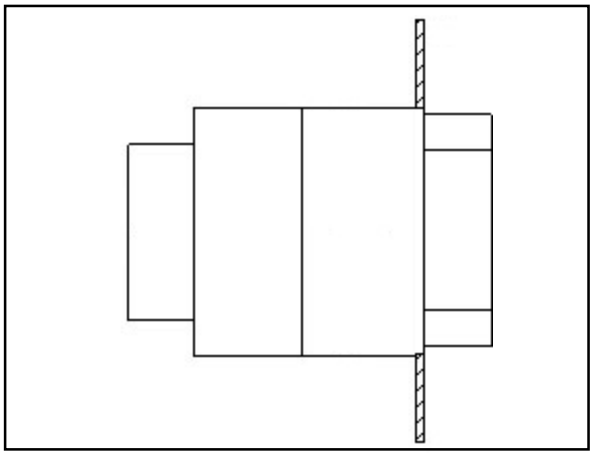


Fig 3-A

Maintenance Facilities: A sink with hot and cold water, large enough to accommodate the racks, should be installed near the machine. 17"/63 x 30 x 10 - 28"/90 x 30 x 15 - 36"/110 x 30 x 5 - 54"/160 x 30 x 15.

Equipment recommended:
- Driptray for racks (available from your dealer as optional accessory - see optional accessories Section 9).

- Rackhoist especially for wider models 91 cm (36"), 135 cm (54"), and models with tank size 2 and 3. (A rackhoist is available from your dealer as optional accessory, see Section 9).

NOTE:

Before plumbing, check your local environmental specifications on waste disposal.

a. Water Supply and Hose Information - The water supply to the processor must be at least 0.3-10 bar (4.3-145 PSI - pounds per square inch) with a shut-off valve at its source. It is recommended that inline filters be used in areas where water purity is a problem. Filters should also be considered to prevent the small water inlets from clogging. If the photographic materials to be used require a certain wash temperature, then a temperature mixing valve should also be installed.
The water temperature should be at least 5°C lower than the developer temperature to ensure proper cooling of developer.
The hose must be rated and capable of handling a pressure applicable to local building codes. ***DO NOT use an ordinary hose***. The inner diameter of the hose must be at least 3/8", and it must have a female hose fitting to attach to the processor. (The other end is hooked to the building's water supply.)
It is recommendable to install an additional water hose near the tank section for cleaning of the tanks.

b. Floor Drain - A floor drain should be installed under the processor's drain fitting so the drain tubing must slope down from the processor to the drain. Avoid traps created by tubing sag because foam may back up in the tubing, overflow from the standpipes into the processor, and contaminate the chemistry.
Do not use brass, copper, and aluminium in the processor's drain system. Black iron, tile, ABS, PVC, and cast iron are acceptable drain materials. A drain system using a sump pump requires a unit with no brass, aluminium, or copper parts contacting the effluent. If a silver recovery unit is used, connect the input on the silver recovery unit to the output on the fixer overflow standpipe. The output of the silver recovery unit goes to the recollecting container.

NOTE:

Service engineers are not authorized to perform any plumbing other than the connections outlined in the installation procedures of this manual.

3.2 Electrical Pre-Installation
(Customer Responsibility)

Operational stability of the processor depends upon proper electrical installation. In accordance with warranty requirements, each processor must be on an individual power distribution branch (dedicated line) that is free of any other equipment.

Voltage and Frequency: The voltage and frequency must be 220/380 V ± 10%, 50 Hz, 3 phases with ground and neutral.1 x 220 V ± 10%/50 Hz or 2 x 115 V + 10%/-0%/50 Hz is available on request, - 60 Hz on request.

Wiring: The processor must be hard wired to the building supply by an electrician. In through the wall installations a breaker should be installed on the right side near the processor. ***NOTE:*** proper grounding is essential for safety and operation.

Circuit Breaker: A 16/32 Ampere industrial-rated circuit breaker must be in series with the power distribution hot line so that all wires are dead at the outlet when the breaker is tripped.

Circuit Breakers:	
3 phases 220/380 V	3 x 16 A
2 phases 220 V	2 x 32 A
2 x 115 V	2 x 32 A

Optional Transformer: If voltage is outside specified ranges you can order an optional transformer at your dealer.

3.3 When Shipment Arrives
(Customer Responsibility)

Package Inspection: Although the processor is shipped in a container that has been carefully designed and tested to provide optimum protection, the processor should be examined closely upon delivery to determine if any shipping damage has occured.
Check all the items received against the order forms, invoices, and shipping documents. If missing or wrong items are received or your shipment arrives visibly damaged, sign for the shipment as either "damaged" or "open" and request an inspection by the delivery carrier. In the event of concealed loss or damage, notify both the delivery carrier and your dealer. Refer to Paragraph 1.3.

IMPORTANT NOTE:
DO NOT return accepted shipments until authorization is established by your dealer. Otherwise, credit and/or replacement may be delayed.

Packages On-Site: The processor shipment should be on-site, in the room where it is to be unpacked and installed. When moving the processor with a fork lift reference the symbols on the outside of the box to ensure it is lifted properly. If the processor package(s) have come from a very cold or very hot shipping environment, allow a sufficient amount of time for the packages to stabilize to room temperature before opening.

3.4 Pre-Installation Verification

Before unpacking, inspecting, or installing the processor, the service engineer will verify that the following exist:

a. A 220 /380 V ± 10% 50 Hz 3 phase line or a line with the supply ordered and confirmed is available.

b. Earth grounding of all dedicated lines.

c. A 16/32 amp fuse or circuit breaker protection for the dedicated line(s).

d. The processor's environmental conditions (plumbing requirements included) are within the specifications listed in Paragraph 3.1.

e. All shipping containers are in the proper area.

Upon verification of all the above, the service engineer should next complete the Set-Up and Operational Verification Procedure. If any of the above conditions do not hold true, advise the customer of your findings and call your dealer for further instructions.

3.5 Set-Up and Operational Verification
(Customer and Dealer Responsibility)

Table 3B is the sequential list of paragraphs to complete the set-up and operational verification for the processor.

TABLE 3B
Set-Up and Operational Verification

Sequence	Description
1	Unpacking and Initial Set-Up
2	Operational Check
3	Chemistry Installation

NOTE:
In the event that the processor should ever need moving or troubleshooting, the customer should become familiar with these procedures.

Unpacking and Initial Set-Up: When unpacking the unit, take care not to throw away any documentation that is included. Ensure that bits of packing material do not remain in the tanks or roller assemblies.

Unpacking and Set-Up Procedure

3.5.a. Unpack the Processor.

1. Unscrew the screws securing the cover to the pallet with a screwdriver. Next cut the banding that also secures the cover.

2. Remove the cover by lifting from one end, and resting the other end on the floor. Fig. 3-B.

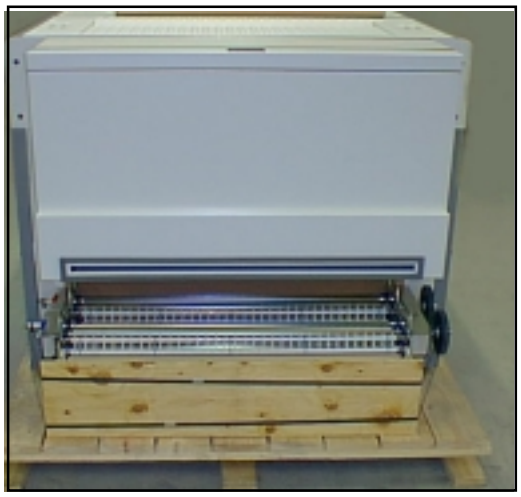


Fig. 3-B. Processor packed on pallet.

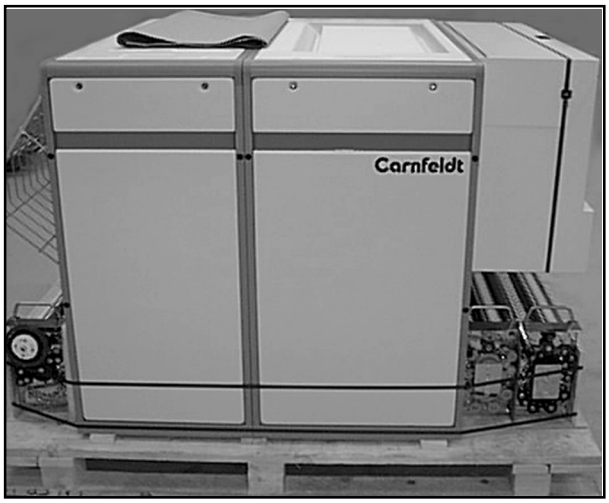


Fig. 3-C. Processor packed on pallet.

3.5.b Install the Processor.

1. **Unpack the Processor**
   The upper plywood crating is fastened to the pallet by a number of screws along the upper pallet edge. When the screws has been unscrewed in by a screwdriver, the upper plywood crating is free of the pallet and can be lifted upwards and then removed from shipment.

2. **Dismantle the Processor from the Shipping Pallet**
   The processor is fastened to the shipping pallet by 4 transportation bolts. If possible, the processor should remain fastened until the installation location has been reached.

   Unscrew the 4 transportation bolts (wrench # 19), remove the 4 side panels, the 2 covers, and all racks, and slide the processor sidewards related to the pallet long edge so that the holes in the bottom frame along the long side of the processor are free of the pallet.

   Screw in the adjustment bolts (user kit box) until 50 mm (2") remain free under the frame bottom. Use 2 adjustment bolts under the wet section and 1 under the rear of the dryer. In each side each adjustment bolt should have one nut and one disc below the frame, and one nut and one disc over the frame inside the machine. Slide the processor further sidewards, until the processor tilts by itself. Make sure to hold contra, to prevent damage.

   Screw in the remaining adjustment bolts, until 50 mm (2") remain free under the frame bottom.

   Tilt the processor until the shipping pallet is free and pull it away. Carefully lower the processor again. Slide the processor to the foreseen installation place.

   Level the processor by adjusting the adjustment bolts.

3.5.c Processor Split in Sections

If the processor has to come through a narrow doorway it can easily be split in two sections.

Remove the dryer section from the wet section in the following way, fig. 3-D:

- Remove the 2 x 3 pc 6MG bolts in each side.
- Loosen and remove the 2 bottom plates in the bottom of the processor.
- Remove the cover from the main interconnection box located in the dry section and unplug the 2 plug-in terminal bars and the yellow/green ground wire which is screwed to the ground rail (fig. 3-E + 3-E1).
- The main interconnection cable, fastened to the side chassis frame, is loosened and removed from the frame.
- On the left side of the processor remove the two 4MG nuts on the geartrain holding the distance plate and remove the plate.

The two sections can now be split. Reassembly goes in the reverse order.

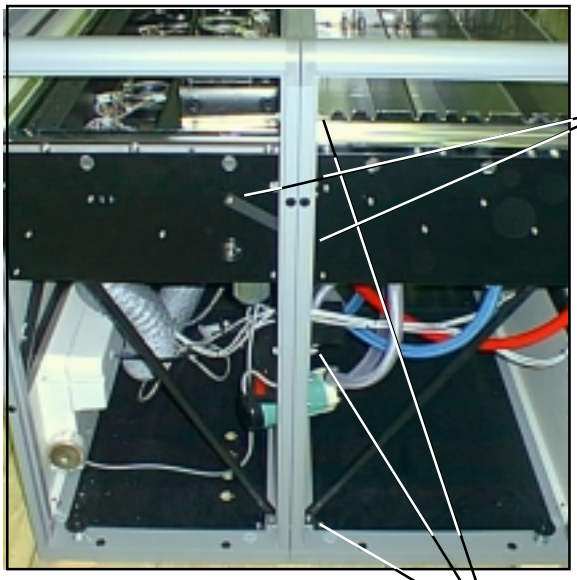


Fig. 3-D

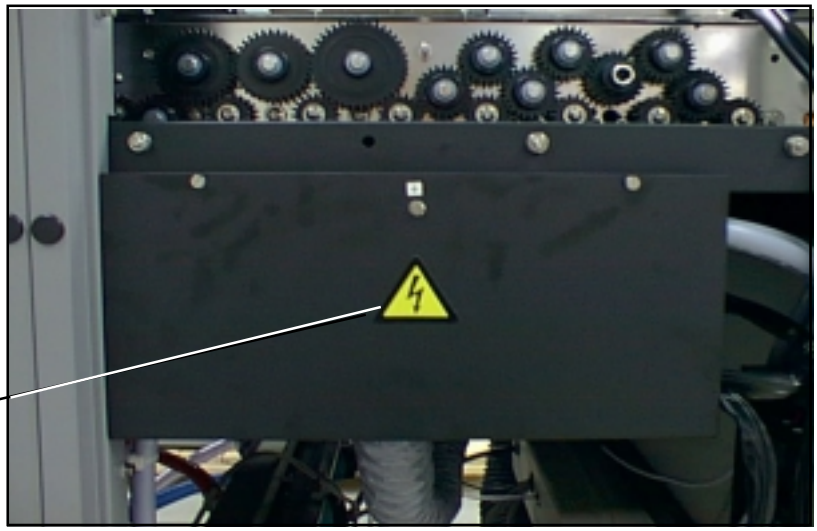


Fig. 3-E. Remove the cover from the main interconnection box.

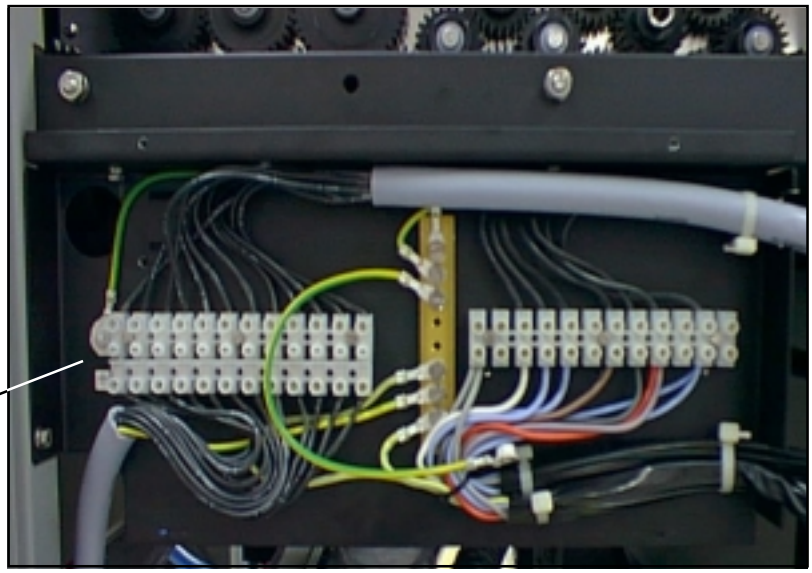


Fig. 3-E1. Unplug the 2 plug-in terminal bars.

3.5.d. Prepare the Dryer *(horizontal dryer only)*

Remove the transport securing wires from the fixation rails on which the dryer rack is resting. Also remove the flat washers and screws securing the upper blower channel to the dryer rack.

Vertical dryer

No tasks at this time.

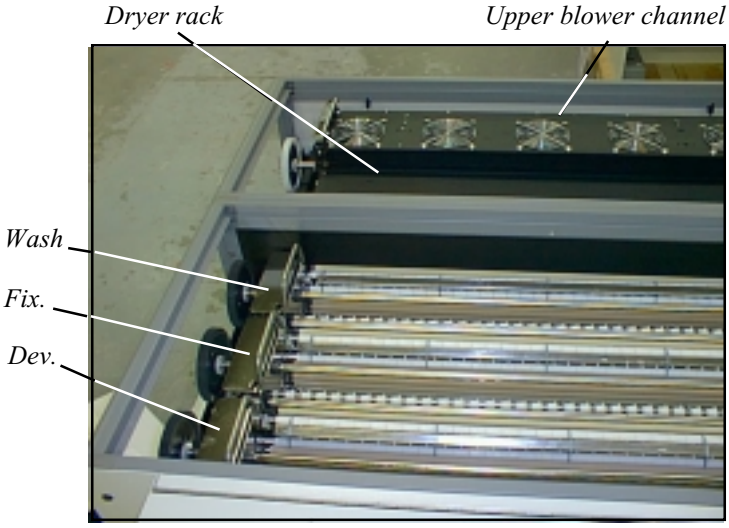


Fig. 3-F

3.5.e Connect The Processor Hoses

In the bottom plate holes to feed all the hoses except exhaust are provided. If drains are not at floor level a better installation will result if the hoses are fed through the front or rear panel. In these cases holes must be drilled or cut (approx. 19 mm / 3/3" and 32 mm / 5/4").

The 7 hoses that should be connected to the processor at the installation are, fig. 3-G, 3-H, 3-I:

- 1 pc 3/8" developer replenishment tube (3.5 m are supplied along with the dev. replenishment container).

- 1 pc 3/8" fix. replenishment tube (3.5 m are supplied along with the fix. replenishment container).

- 1 pc fresh water supply. A hose approved by the local authorities for water supply must be supplied by the customer. The hose must have an 3/4" female pipe thread at the processor end, minimum inner diameter 3/8" (10 mm). A water supply hose for washing machines or dish washers will offen do.

Fig. 3-G

Developer drain connection

Fixer drain connection

Water drain connection

Fig. 3-I

Exhaust hose connection

Fresh water supply

Repl. hose connection

Fig. 3-H

- 1 pc water drain hose. Inner diameter 1" (25.4 mm) to be connected inside machine. Can come out of machine through the bottom, the hose should be connected to the drain system without any loops. Must be supplied by the customer.

- 1 pc developer drain hose and

- 1 pc fixer drain hose, both have inner diameter 1" (25.4 mm), to be connected inside the machine. Can come out through the bottom of the machine. The tubes should be connected to recollecting container, which must be supplied by the customer.

- 1 pc 100 mm diameter hose for exhaust. The hose (supplied by the customer) is secured to the stud on the front below the feedtray (on the rear for 17" processor).

1. Inside of the processor below the tank section the hose connections are mounted. Place each hose on its respective connection and push all hoses on as far as they will go.

2. Place the hose clamps on the hoses. Slide the hose clamps up to the connections and fully tighten them.

3. Connect and fully tighten the water inlet hose (supplied by the customer) to the 3/4" standard hose fitting below the tank section inside the processor.

3.5.f Connect Opposite End Of The Hoses

1. Place the fixer (blue) drain hose and the developer (red) drain hoses into two separate recollecting containers (supplied by the customer) near or under the processor. The recollecting containers should have covers with a hole for the drain hoses (covers will help eliminate fumes). ALWAYS use two containers, DO NOT allow any of the drain hoses to bend in any way, cut them to fit (fig. 3-J).

2. Shipped with the processor are two marked replenishment containers, and two replenishment container covers. Place the replenishment hoses onto the angled end of the PVC tube and clamp the hose (fig. 3-K).
   Extending the replenisher hoses will affect the capacity of the replenishment system. Extending the tubes may only be allowed depending on the amount of replenishment needed by the specific chemicals and photographic job. A higher setting than normal of the replenishment dial may be necessary. Using larger diameter hoses will minimize the effect of long hoses.

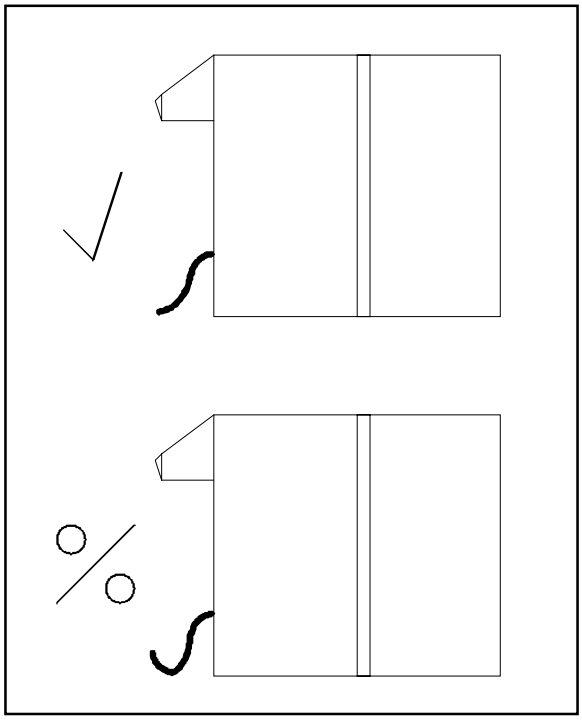


Fig. 3-J

3. Connect and fully tighten the water inlet hose to the water supply. *DO NOT TURN THE WATER ON AT THIS TIME!*

4. The 100 mm diameter exhaust hose should not be longer than 6 m and should run out of the building with as few bends as possible. If the distance out of the building is too long, extra fans in cabinet 250199 should be ordered.

NOTE:

Cut the drain and replenishment hoses as short as possible. A shorter hose will prevent problems with replenishment and draining.

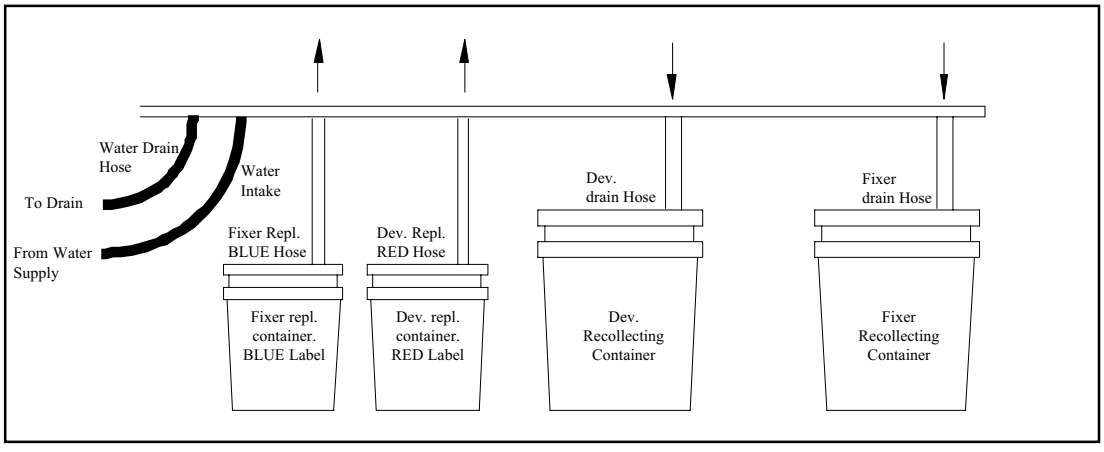


Fig. 3-K

3.5.g Connect Electrical Power

1. Remove the 2 screws holding the cover over the power box, fig. 3-L.

2. Feed the power cable through the bottom plate, and in through the hole in the bottom of the power box.

Fig. 3-L
Feed power cable through

Each processor is delivered with three short-circuit beams, fig. 3-M1, which can be mounted according to the power connection at the customers. At delivery, the processor is equipped with short-circuit beam #1. This short-circuits N1, N2 and N3 for three phase connection with one neutral (Europe).

If single phase connection is required, slide short-circuit beam #2 into short-circuit #1, which results in a short-circuit of L1, L2 and L3. Hereafter, just connect the phases to L3 and N3.

If three phase connection without neutral is required (USA, Norway) mount short-circuit #3 and connect the phases to L1, L2 and L3.

Please also turn to chapter 7, page 30.

Fig. 3-M
Main connection terminal block
short-circuit beam

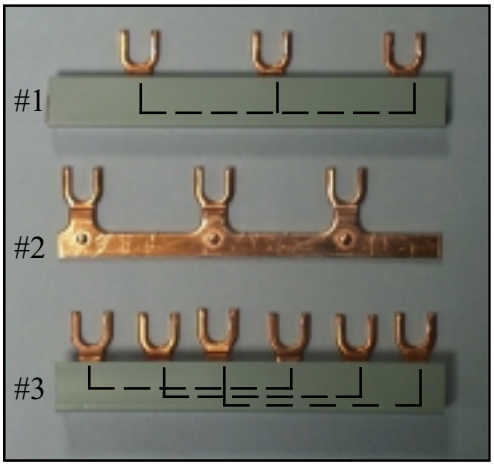


Fig. 3-M1

3. Reinstall the cover for the power box by its 2 screws, fig. 3-L.

3.5.h Clean Trays

With a damp sponge clean all three tanks. Be sure to remove all dust and shipping debris before operating the unit.

3.5.i Level The Processor

1. Ensure the processor is in its permanent location.

2. Carefully pour water (do not splash) into the developer tank until the overflow level is reached. Use the rollers to visually level the processor, from right to left. From front to back a spirit level must be used on top of the frame.

3. If leveling is necessary, use the # 19 open end wrench to adjust the machine's leveling feets, (fig 3-N), until the water appears level. (Rotating the wrench in a clockwise manner will raise the processor). All leveling feet must make contact with the floor so that rocking cannot occur.

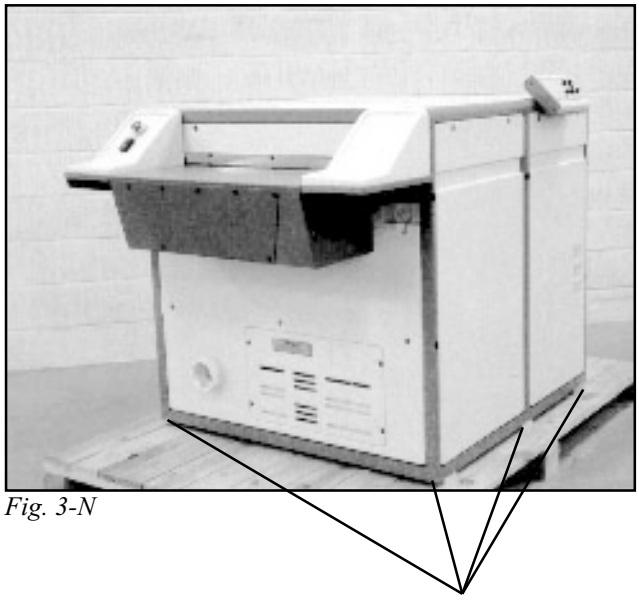


Fig. 3-N

—— Unpacking and Set-up is Complete. Perform the Operational Check Procedure ——

3.6 Operational Check: The operational check ensures that the system is operating properly.

Important Notes:

- It is IMPERATIVE that the processor be flushed with water before chemistry is installed. Therefore, the operational check procedure requires the use of water (not chemistry).
- NEVER RUN THE PROCESSOR DRY!
- Exercise extreme care when operating the processor with the cover open. Keep clothing and jewelry away from the media transport and terminal block ares.

TABLE OF CONTENTS

User Section:

Service Section (only for servicetechnician):

CONTROL PANEL FUNCTIONS

The film processor Control panel has two functions:

- It shows the status of a job in progress.
- It allows the operator to choose among various programs for job control.

The operator may also change a program to suit the job at hand, or enter new programs for future jobs.

Besides a display (I), the Control Panel contains 3 kinds of elements:

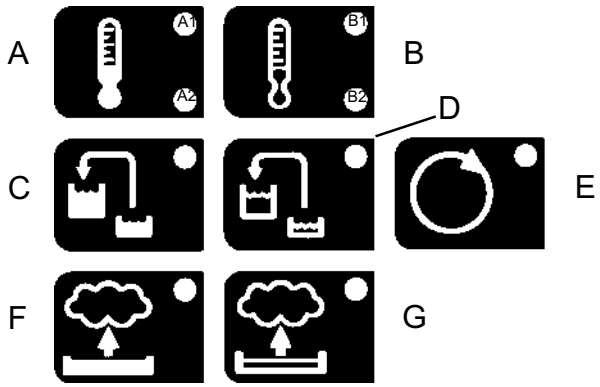
- Buttons: black indicators which can be pushed.
- Symbols: grey indicators which resemble buttons but cannot be pushed: these illustrate a function or process
- Lamps: diodes which light under certain conditions.

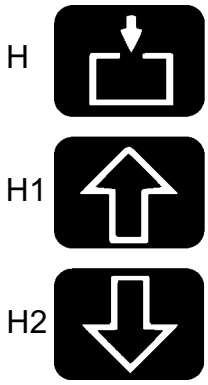
The large green rectangle (K) is also a button, and is used to program the system.

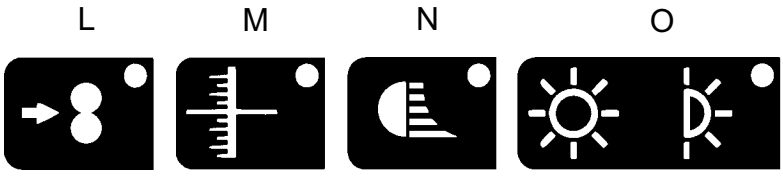
A. Developer temperature
Push this button, and the Display (I) shows the temperature of the developer bath.

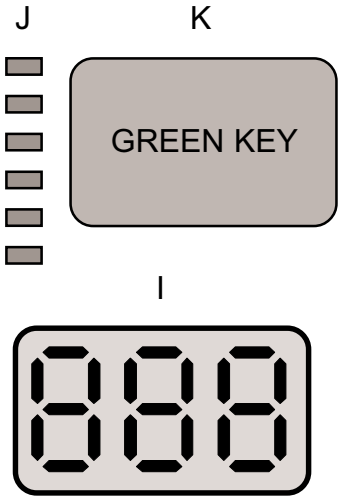
A1. Developer Temperature Selected
When this lamp is lit, the developer temperature is being programmed.

A2. Developer Heater On
When this lamp is lit, the developer is heating up.


A
A1
A2
B
B1
B2
D
C
E
F
G


H
H1
H2


L
M
N
O


J
K
GREEN KEY
I

CONTROL PANEL FUNCTIONS - CONTINUED

B. Fixer Temperature
Push this button, and the Display shows the temperature of the fixer bath.

B1. Fixer Temperature Selected
When this lamp is lit, the fixer temperature is being programmed.

B2. Fixer Heater On
When this lamp is lit, the fixer is heating up.

C. Developer Replenishment Selected
The symbol illustrates the developer bath being replenished - a process that takes place as needed, automatically, during operation. When the lamp is lit, the quantity is being programmed.

D. Fixer Replenishment Selected
The symbol illustrates the fixer bath being replenished - a process that takes place as needed, automatically, during operation. When the lamp is lit, the quantity is being programmed.

E. Developing Time Selected
The symbol illustrates a complete process. When the lamp is lit, the developing time is being programmed.

F. Developer Anit-Oxidation (AOX) Replenishment Selected
The symbol illustrates that the AOX pump is on. Developer is automatically added to the bath every 20 minutes in order to prevent oxidation. When the lamp is lit, the quantity is being programmed.

G. Fixer Anti-Oxidation (AOX) Replenishment Selected
The symbol illustrates that the AOX pump is on. Fixer is automatically added to the bath every 20 minutes in order to prevent oxidation. When this lamp is lit, the quantity is being programmed.

H. Programming Mode
This button is pushed to enter and exit programming mode.
While in the manual programming mode, it is also used to start and stop the selected processes.

H1. Increase Value
Push this button to increase the value shown in the Display while in programming mode.

H2. Decrease Value
Push this button to decrease the value shown in the Display while in programming mode.

CONTROL PANEL FUNCTIONS - CONTINUED

I. Display

The Display shows the developing time except in the following instances:

1. When the Developer Temperature button (A) is pressed, the developer temperature is displayed.

2. When the Fixer Temperature button (B) is pressed, the fixer temperature is displayed.

3. When an error is detected, the display shows the corresponding error code.

4. When in programming mode, the value of the selected function is displayed.

J. Selected Program Indicator

The program currently selected is shown by the column of lamps. The first 5 lamps indicate programs 1 through 5, and the last one indicates that a manual program is selected.

K. Program Select

During normal operation, press this button to select a different program. In programming mode, use it to select the next variable to be programmed.

L. Feed Symbol

When lit, indicates that film or paper is entering the processor. The symbol remains lit until the rear edge of the film is in the developer bath. When it extinguishes, three beeps sound and new film may be inserted.

M. Level Error Symbol

Sensors monitor the levels of the three fluid baths and replenish them automatically when their levels fall. However, if 40 seconds pass (15 minutes for the wash) and a bath fails to attain the correct level, five beeps sound, the lamp beside this symbol light up, and the Display shows the following flashing error codes:

Code	Explanation
1	Low level in the developer bath
2	Low level in the fixer bath
3	Low level in the wash bath

In case of 1 and 2, check the quantity in the containers.
For 3, check the water supply. If these measures do not correct the error, contact your service representative.

Codes 4, 5,6, and 7 are described in the next section, “Error Codes”.

CONTROL PANEL FUNCTIONS - CONTINUED

N. Lamps ON/OFF

If the film being developed is sensitive to red light, push this button to turn off all the lamps on the control panel.

O. Process and Night Modes

Press this button to toggle between Process mode and Night mode.
The lamp is lit when Night Mode is selected. Operation can take place only in Process mode.

If this button is pressed while film is in the machine, the system enters Night Mode when the film is out.

ERROR CODES

Certain errors causes the Display to flash and show one of the following codes:

Code	Explanation
1	Low level in the developer bath
2	Low level in the fixer bath
3	Low level in the wash bath
4	Fluorescent light weak
5	Developer temperature sensor defective
6	Fixer temperature sensor defective
7	Film transport error

Codes 1, 2 and 3 are described under "M. Level Error Symbol" in the preceding section.

Code 4 appears only if the option is installed. Replace the fluorescent tube.

In case of codes 5 and 6, contact your service representative.

If code 7 appears, remove jammed film from racks, and press <green key>.

PROGRAMMING THE CONTROL PANEL

The columns of lamps on the control panel indicate that up to six different programs can be stored. These consists of five applications programs (1-5) and a manual program (m). These programs have been factory set with following defaults values:

Program	Time (sec.)	Dev. & Fixer Repl. Quantity	Dev. & Fixer AOX Quantity	Temp. °C
1	15	300 ml	100 ml	circa 30
2	30	"	"	"
3	60	"	"	"
4	90	"	"	"
5	120	"	"	"
m	15	"	none	none

Any program can be reprogrammed by the operator by entering the programming mode. Two different programming methods are used, one for the application programs and the other for the manual program.

Note: Programs cannot be modified while film is being processed.

PROGRAMMING METHOD FOR PROGRAMS 1 - 5

1. Select the program to be changed.

Continue pressing the Program Select button (K) until the desired program is reached.

2. Enter programming mode.

Press the Programming Mode button (H).

3. Program the temperature of the developer bath.

The first variable to be programmed in the application programs is always the developer temperature. The Developer Temperature Selected lamp (A1) is on and the Display shows the current setting.

To change the setting, use the Increase Value (H1) and Decrease Value (H2) buttons. The Display will show each new value as the buttons are pushed.

When the correct setting has been reached, press Program Select (K) to move to the next variable to be programmed.

PROGRAMMING - CONTINUED

4. Program the remaining variables.

The temperature of the developer bath is the first of the seven different variables that can be programmed in the application programs. The variables are always programmed in the same order. This order, plus the range of allowable settings for each variable, is shown below.

1. Developer temperature	20-45 °C
2. Fixer temperature	20-45 °C
3. Developer replenishment quantity	0-999 ml/m² film
4. Fixer replenishment quantity	0-999 ml/m² film
5. Developer time	15-120 seconds
6. Developer AOX replenishment quantity	0-999 ml
7. Fixer AOX replenishement quantity	0-999 ml

Each variable is programmed in exactly the same way as the developer temperature. Use Increase (H1) and Decrease Value (H2) to set the variable shown in the Display. When the correct setting has been reached, press Program Select (K) to move on to the next variable. If the current setting, as shown in the Display, is acceptable and shall not be change, simply skip it by pressing Program Select (K) to move on.

The variable that is currently being programmed can always be seen by checking the select lamps (A1, B1, C, D, E, F and G).

The variables are arranged in a loop. After all seven are programmed (or skipped), it is possible to press Program Select (K) once more and start at the beginning again.

This approach allows the operator to correct errors or to check if the correct settings were programmed.

Note: If no buttons are pressed for 30 seconds, the system automatically leaves programming mode and reverts to normal operation. In such case, all changes which have been made are lost. The display no longer shows the value for the variable being programmed, but instead the developing time.

5. Save the program and leave programming mode.

Press Programming Mode (H).

This can be done at any time, it is not necessary to program all seven variables or go to the end of the loop. When this button is pressed, all changes are saved. It is also possible to leave programming mode without saving the changes. This is done by not pressing Programming Mode (H). After 30 seconds the system reverts to normal operation, and all changes are disregarded.

PROGRAMMING METHOD FOR MANUAL PROGRAM

Manual programming allows the operator to program values and start processes without any time limitation. Unlike application programming described above, the system does not revert to normal operation after a 30-second wait but remains in programming mode until the programming Mode button (H) is pushed.

1. Select the manual program.
Continue pressing Program Select (K) until the manual program is reached.

2. Enter programming mode.
Press Programming Mode (H).

3. Program the developer replenishment quantity.
(This step may be skipped).

The first variable to be programmed in the manual program is always the developer replenishment quantity. The Developer Replenishement Selected lamp (C) is lit, and the Display shows the current setting.

To change the setting, use the Increase Value (H1) and Decrease Value (H2) buttons. The Display will show the new value. Stop when the correct setting has been reached.

4. Start the developer replenishment process.

(This step may be skipped).

Press Programming Mode (H). The Developer Replenishment Selected lamp (C). will begin blinking, signaling the process has begun. The Developer bath will be replenished with the programmed quantity.

5. Move on to the next variable.

Press Program Select (K).

6. Program and start the remaining processes.

Developer replenishment is one of the three variables that can be controlled in the manual program. The variables and their processes are always encountered in the same order. This order, plus the range of allowable settings for each variable, is shown below.

MANUAL PROGRAMMING - CONTINUED

1. Developer replenishment quantity	0-999 ml/m² film*
2. Fixer replenishment quantity	0-999 ml/m² film*
3. Developing time	15-120 seconds

Each process is programmed and started in the same way as developer replenishment. Use Increase (H1) and Decrease Value (H2) to change the value shown in the Display. When the correct setting has been reached, press Programming Mode (H) to start the process. The next process is reached by pressing Program Select (K).

When developing Time has been selected and the select lamp (E) is lit, pressing Programming Mode (H) starts the motor and the developing process begins.

All three values can be changed without starting their corresponding processes. Likewise, the processes may be started without changing the values.

The select lamps (C, D and E) serve two purposes in the manual programming mode. When a lamp is on, it indicates which variable is being programmed. When it is blinking, it indicates that the process has been started. Once a process has begun, the lamp continues to blink until the manual program mode if left.

The processes are arranged in a loop. It is possible to run through the loop as many times as desired. The processes do not need to be atarted in the order encountered, nor do all of them need to be started. Once a process has been started, however, it cannot be stopped except by leaving the manual programming mode.

It is possible to reprogram the setting of a variable after its process has been started, but then the new value will not apply until the process is begun again.

* **If 999 is entered and Increase Value is pushed one more time, the Display shows 000 and fluid is added continuously, regardless of developing time.**

7. Leave the manual programming mode and stop the current processes.

Press the Programming Mode button (H) twice.

If the process selected has not been started, pressing this button only once will start the process instead of leaving the manual programming mode.

Excampel of changing the temperature, replenishment, motor or Anti-oxidation (AOX):

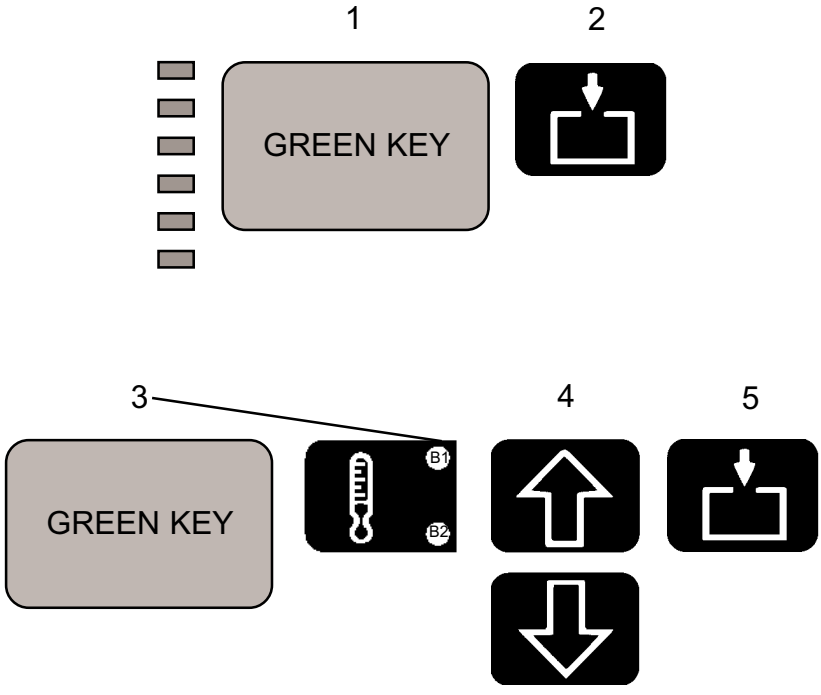
The machine must be in power-save. Change between programme 1-5 and MANUEL program manualy with the <escape> key. When the disired programme is chosed press <enter> to select. The LED in the developer symbol (A1) will light up. You can now use the <escape> key to change between the temperature, replenishment, motor and AOX. To change one of the values, you must either use arrow up or down. When you are finish press <enter> to store the adjustments.

Example: Changing the FIX temperature in program 3

Processor must be in power saver !

1 Change to program 3 by use of the <escape> key.
2 Press <enter> to enter program 3.
3 Change to fixer temperture by use of the <escape> until B1 is on.
4 Now change the temperature to the desired value bu using the arrow keys.
5 Press <enter> to store the adjustment.

The same procedure is used when other settings has to be changed.



Changing software settings (0nly for servicetechnicians)

Conditions:

1 All tanks are filled with water/chemistry
2 The replenish containers are filled with water/chemistry
3 All sensors are mounted and connected to the controlbox/interface
4 All wires/cabels are mounted correctly

Control of the machine:

1 The machine is switched on. Check that the microprocessor is running. The lightdiodes D1and D2 (HALT and WATCHDOG) flashes.

2 The level sensor is checked by lifting the sensor free of the fluid in the tank. The light diode D90 turns itself off when the sensor is lifted from the developer, the light diode D91 turns itself off when the sensor is lifted from the fixer and light diode D92 turns itself off when the sensor is lifted from water. By level errors in developer and fixer, the heat must be switched off in the tank where the level error is.

3 The machine starts when the IR-Inlet sensor is activated. Both top and bottom drying section are now running, the drive motor drives the racks and all circulationpumps are running. The Tacho light doide, D3, flashes once for every round the driv motor runs.

Description of the setup programme:

The setup programme is made for starting up the machine. There are functions like adjustment of depth, type and width of the racks and adjustment of the temperature sensors. When these adjustments have been made from the factory, is it only necessary to change them when the steering is replaced or when a temperature sensor is replaced.

In the following text, words like <enter> and <escape> are used. <Enter> is the key with the symbol “into box” and escape is the big green key. The rest of the keys should answer for them selves.

The programme is selected by using the arrow keys and is started by using the <enter> key.

When the setup programme is activated, the machine will start to heat until the temperature in the tanks are in the working area of the temperature sensors.

There is always circulation in the setup mode.

Heat in developer and fixer can be turned on and off manually by using the temperature keys. (Toggle function). By too low level, the heat can not be turned on.

Functions in Setup Programme:

Start off setup programme:

Move jumper JP2 to position SETUP, and press reset (Red switch on the right side of the CPU PCB). Do not forget to move jumper back, or it is impossible to leave the setup programme.

Programme 1, Software switches:

Display now shows switch, position and value (see fig. 1).

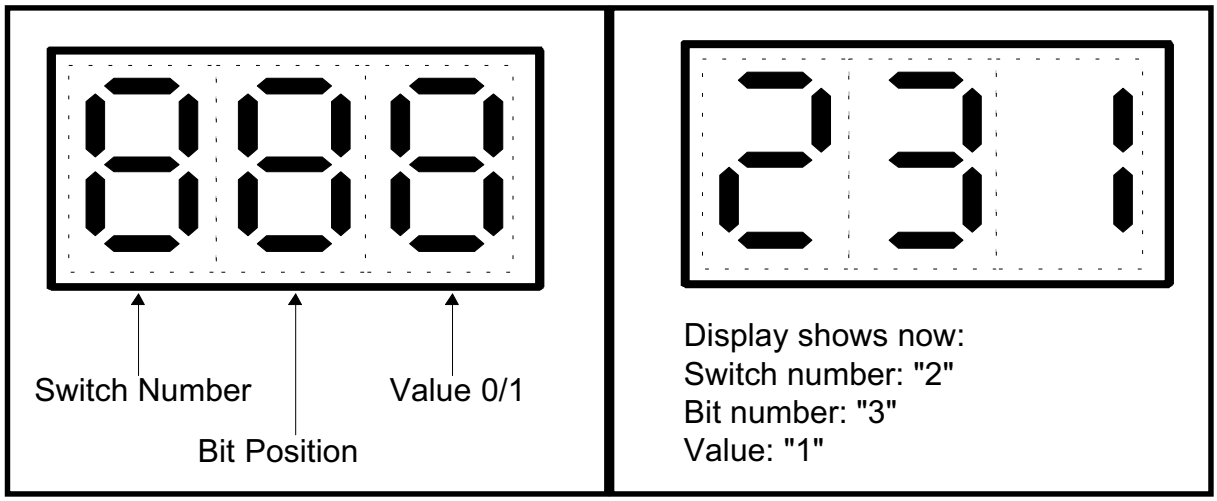


Fig1 Exampel

Use the arrow keys (H1,H2) to choose the position (0-7) in the switch. Automatic change to switch 2 when swith 1 is finished. It is possible to return (arrow down H2). Change the switch value by the green key (K). When pressing the green key (K) zero is changed to one and reverse.

Switch 1, bit 0-2 (rack type)

Bit	Value	Rack number
210	000	tabletop model
210	001	1, 44cm rack length
210	010	2, 67cm rack length
210	011	3, 90cm rack length
210	100	Unitrack 1, 44cm rack
210	101	Unitrack 2, 67cm rack
210	110	Unitrack 3, 90cm rack
210	111	Unitrack 3 + HD + HD

bit 3-4 (rack width)

Bit	Value	Rack width
43	00	17" / 43cm
43	01	28" / 71cm
43	10	36" / 91cm
43	11	54" / 135cm

Switch 1

-	0	1	1	0	0	0	1
7	6	5	4	3	2	1	0

If the software switch #1 is set as shown, the developer is set as follows :
A 44cm rack length, 36" rack width, no outlet sensor mounted and AOX reset on.

bit 5-7 (options)

Bit	Value	Function
5	0/1	0=Outlet sensor mounted, 1= No outlet sensor mounted
6	0/1	0 = AOX reset on*)
7	0/1	Not in use

*) When AOX reset is ON, 20 minutes after the film leaves the inlet sensor, the AOX programme will start. If the AOX reset is OFF, the 20 minutes will not depend on the inlet sensor. This is only important if RALI-chemicals are used where the tank capacity in a period of time needs replacement.

Switch 2, bit 0-7 (options)

Bit	Value	Function
0	0/1	0 = Ultrasonic mounted
1	0/1	0 = Sensorbar mounted
2	0/1	0 = Film scanner mounted
3	0/1	0 = Separate AOX pump mounted
4	0/1	0 = Beep when pressing key
5	0/1	0 = Two ultrasonic sensors in inlet
6	0/1	0 = Automatic refill when level error
7	0/1	Is used by the programme (may not be changed)

Switch 3, bit 0-3 (options)

Bit	Value	Function
0	0/1	0 = No heat and AOX in stand by
1	0/1	0 = External on/off (extra board needed)
2	0/1	0 = Hell/Linotype DC 3020/3030 On-Line 1 = Purup On-Line
3	0/1	0 = Infrared input sensor 1 = Ultrasonic input sensor

Programme 12, Gearing factor

The gearing factor is normally not to be changed. It is to be 133.

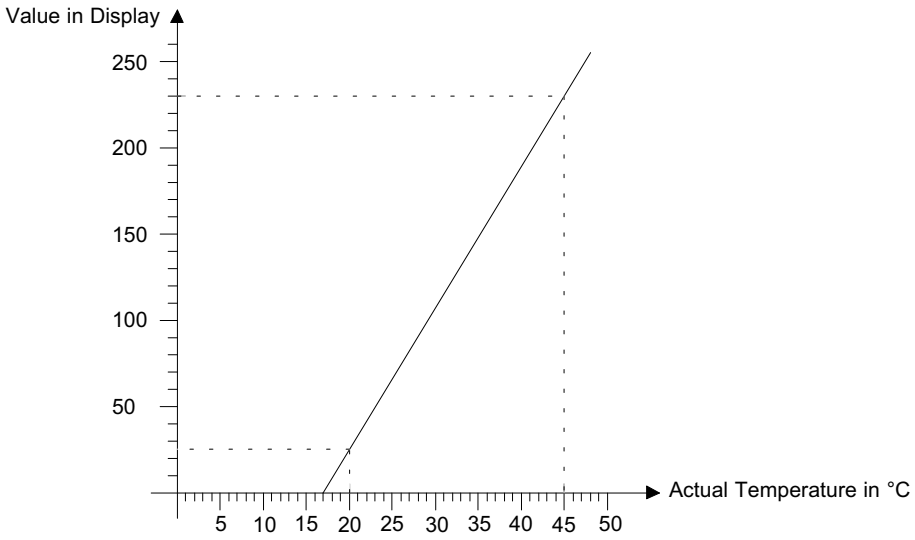
Programme 2, Motor calibration

The programme is started by using the "enter" key. When the programme is started, the driv motor will start to run. The speed of the driv motor will change many times during the 10 - 15 min. it takes for the programme to calibrate the motor (maximum 30 min.). Every time the tacho sensor is activated, the tacho light diode D3 will flash.
When the programme is started, you can carry on with the other programmes. If the motor calibration programme is the only programme you want to be made, you must not leave the setup programme until the driv motor stops. (The tacho light diode stops flashing)

Programme 6, Temperature calibration

The programme is used to check if the temperature probes are within their active range. If they are replaced, this programme must be used to adjust the temperature.
Start programme with <enter>. The light-emitting diode in temperature symbols indicates which bath is measured. The <escape> key will change to next bath. When the display shows dev bath value and the bath is 20°C. the display should show a value close to 26. The same thing with fix. The following tabel shows the display readout in proportion to the actually temperature in the current tank.

Display	Temp.	Remark
0	17°C	Too cold or probe short circuited
26	20°C	Reference
230	45°C	Reference
255	48°C	Too hot or probe interrupted.



Programme 7, Developer temperature calibration

The calibration is a twostep process, and the first time the programme is started enter a temperature from the low end of the scale (<25°C). Second time the programme is started enter a temperature from the high end of the scale(>35°C). It is possible to leave out a point by using the <escape> key. This is usefull by recalibration.

When you run the programme for the first time, you have to make sure that the actual temperature is close to the reference temperature (20°C). The actual temperature is adjusted by use of the arrow keys until the display have the same readout as the actual temperature. The programme is stoped by pressing the <enter> key. You have now adjusted the low reference temperature and remain to adjust the high temperature.
To make the temperature rise, you press the **DEV HEAT** key. The next time you run the programme, the high temperature must be adjusted. The temperature should be 45°C and you adjust it the same way as with the low temperature. It takes a while to reach the 45°C. You can use this time to make other adjustments.

Program 8, Fixer temperature calibration

Look at the description under program 7.

Programme 3, developer pump calibration

Before the programme starts, a measure socket is placed on the regeneration pipe branch. It has to secure that no air is in the regeneration hoses.

The programme starts by **<enter>**. The programme begins with starting the pump. When the pump stops, it is reading on the measure socket, how much there will be pumped. The reading quantity is now adjusted by the arrow keys until the display agrees with the actually quantity.
Now the measure socket is emptied, it has to be replaced under the regeneration pipe branch.
The programme is now trying to pump 400ml fluid into the measure socket. If the quantity is departed from the 400ml, it can be adjusted by the arrow keys, until the reading value in the measure socket agrees with the display. **Please do remember that no air must be in the hoses.**

Programme 4, Fixer pump calibration.

Please see the description under programme 3.

Programme 5, AOX pump calibration.

Please see the description under programme 3.

Programme 11, Programme initiating.

Only to be entered by exchanging the E-prom

Programme 13, Relay test.

When the programme starts by <enter>, a number between 1 and 9 shows, which can be changed by the arrow keys. Every number represents a relay on the relay printer. (It is mounted under the Feed-Tray).

The following table shows the relay number, and which function the relay controls.

Relay	Function
1	The bottom of the dryer section
2	The top of the dryer section
3	Developer heat element
4	Fixer heat element
5	Option, is not used
6	Circulation
7	AOX replenisher pump
8	Developer replenisher pump
9	Fixer replenisher pump

When you are using the programme and the display shows one of the above mentioned numbers, you can control the relay in question ON/OFF, by means of the <escape> key. The relay will then be turned off and turn on the function in question. At the same time you will see that the belonging light diode will be turned on and turned off together with the relay.

The programme ends by means of the <enter> key.

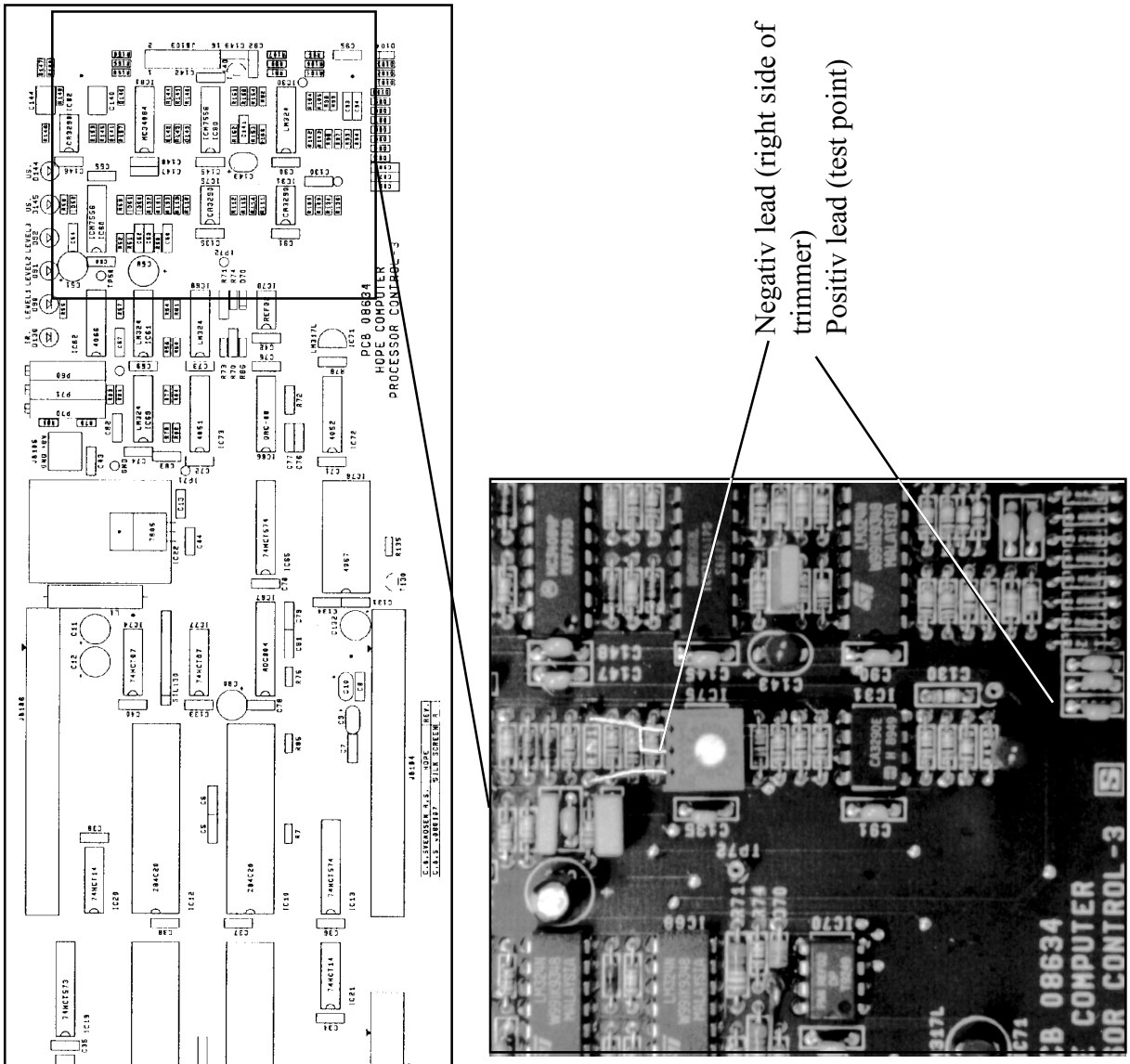
Programme 14, Motor test.

Start the programme by <enter>, the display shows a number between 0 and 255. This number can be changed by the arrow keys. The value will vary the speed on the motor. The motor can be turned off and turned on by the <escape> key.

End the programme by <enter>.

Program 0, Finish.

Before you use the program make sure that Jumber JP2 is not in SETUP position.
This program is used to leave the Setup program. It is very important that this program is used, or all the adjustments made will not be stored in the microprocessors memory.
The program is started by pressing the <enter> key. It takes about a second for the microprocessor to store all the data. After finishing it goes back to the normal mode and the machine can now be used.



Adjustment of IR-Sensor on Microprocessor Control:

The voltage between the two points shown on the figure is measured and adjusted to +500mV on the trimmer mounted on top of the integrated circuit.

Check that the machine starts when the film is introduced under the sensor. If necessary the voltage must be adjusted to a lower voltage if the machine does not see the film, but a replacement of the sensor is then advisable.

5.1 Introduction

This section details the general and specific tasks which must be performed during preventive maintenence, mechanical/electronic adjustments, and troubleshooting.

Before performing any task, read through the entire subsection. By doing so, you will gain a better understanding of each procedure and any other procedures that may also have to be performed, plus tools and/or parts which may be needed.

If a procedure is labeled for technicians only, either a trained service engineer or a qualified technician should be called to perform the procedure.

Finally, always take care when performing any procedure - ***SAFETY is the most important concern. Always turn off the main switch and lock by a padlock (where stated) before starting a procedure. Always drain the chemistry when working on the recirculation system.*** Never allow loose clothing or jewelry to come into close proximity with the gear train or media transport area.

5.2 Preventive Maintenance

(Customer Responsibility)

The objective of preventive maintenance is to maintain the reliable, troublefree performance of the processor. There are specific preventive maintenance tasks which must be performed on a scheduled basis to meet this objective. These tasks are identified in Table 5A.

Table 5A

Recommended Preventive Maintenance Schedule

Daily Maintenance

- Clean the feed tray.
- Clean all rollers and guides above liquid level with a wet sponge, and check that the guides again are in correct position.
- Check the replenishment tanks, pumps may not run dry. Remember hardener in fixer.
- Before start of processing check that temperature, speed and water flow are correct.
- Run a cleaning film through the processor every morning to ensure that the chemical activity level in baths is correct.
- Check that exhaustsystem is working

Weekly Maintenance

- Clean the processor for chemical stains with a wet cloth or sponge.
- Empty the wash tank before weekend and refill after the weekend to avoid algae growth.
- Only use anti-algae agents without chlorine (bleaching) and clean as required.

Preventive Maintenance *)

- Good developing quality and troublefree processing are conditioned by regular cleaning and maintenance. Do only use qualified personnel.
- Exchange chemistry and clean racks and tanks with warm water max. 40°C.

*) Every 2-4 months, dependent on how intensively the processor is used.

NOTE:

A maintenance log is provided at the end of the manual. This log should be copied (to have a permanent supply) and filled out each time a maintenance function is performed. This will aid the operator in processor operation and technical personnel, should the processor ever need servicing.

CLEANING PROCEDURES

(Customer Responsibility)

5.2.a Water Cleaning: The processor should be rinsed with water during every chemical change. The roller racks and tanks should also be cleaned at this time. This cleaning will not only keep the processor and output copy clean, but also aid in the prevention of chemical contamination.

Water Cleaning Procedure

Equipment required: Soft bristle scrub brush
Paper towels

Equipment recommended
- Driptray for racks (available from your dealer as optional accessory - see Optional Part List, Section 9).
- Rack hoist, especially for wider models: 91 cm/36", 135 cm/54", and models with tank size 2 and 3 (A rack hoist is available from your dealer as optional accessory - See Optional Part List, Section 9).

1. ***Turn the main power switch OFF and remove the top covers.***

2. Open the drain valves and drain the chemistry. Ensure the drain containers are in place and are empty enough to accommodate the chemistry being drained, table 5B

	17"	29"	36"	54"
1	19L	25L	33L	45L
2	27L	39L	50L	66L
3	38L	53L	62L	74L

Table 5B

3. When the chemistry is completely drained, close the drain valves. Dispose of the chemistry. Place the developer and fixer drain hoses into the drain.

4. Dispose of any chemistry in the replenishment containers. Fill the replenishment containers with clean warm water and reconnect them to the processor.

5. Fill the developer, fixer, and wash stations with clean warm water.

6. Position the mode switch in the day (operate) position and place a piece of film (paper) under the inlet sensor, the film should not engage the inlet rollers. Turn the main power switch on, and set the dev. and fix. replenishment dial to max. Leave the main power switch on for 15 minutes.

7. When the 15 minute rinse is through, turn the main power switch OFF.

8. Drain the water from the three stations.

9. One station at a time, remove the roller rack.

10. Clean the roller rack with warm water in a sink. Use a soft bristle scrub brush to remove any chemical crustation or sludge.

11. Using paper towels, wipe out the tank. Ensure no bits of paper are left in the tank. If deposits are beginning to build up in the first station, then the processor should be cleaned with universal processor cleaner.

NOTE:

Roller discoloration is normal especially in the developer rack.

12. Return the roller rack to its proper station (identified by label).

13. Repeat tasks 9 through 12 until all stations have been cleaned.

14. Place the developer and fixer drain hoses back into their recollecting containers.

15. Add chemistry in accordance with the chemistry installation procedure in Section Three.

16. Replace the top covers.

17. Complete the processor maintenance log.

Chemical Cleaner: When chemistry is changed, or if deposits are observed in the first station's tank, the customer should clean the processor with universal processor cleaner. The chemical cleaner removes normal chemical build-up from the pumps, hoses, and tanks.

To order the processor cleaner, contact your dealer.

5.2.b Dryer Roller Cleaning: The entrance dryer rollers should be cleaned each time the processor is rinsed with water (or every chemical change).

WARNING:

Always turn off the main switch and lock by a padlock when cleaning the dryer rollers.

Dryer Entrance Roller Cleaning Procedure

Equipment required: Lint-free cloth

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Use a lint free cloth dampened with water to wipe down the surfaces of the dryer's two entrance rollers.

CAUTION:

DO NOT spray any water or cleaning solution on the surfaces of the rollers. Dampen the cleaning cloth with water only.

5.2.c External Surface Cleaner: The external surfaces of the processor should be cleaned on a periodic basis, or any time the surfaces come in contact with chemistry.

WARNING:

Always turn off and lock the main switch when cleaning the external surfaces.

External Surface Cleaning Procedure

Equipment required: Lintfree cloth
Mild detergent

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Use an lint free cloth dampened with a mild detergent to wipe down all external surfaces.

CAUTION:

DO NOT spray any cleaning solution on the surfaces of the processor. Dampen the cleaning cloth only.

3. Allow all cleaned surfaces to **DRY** before turning on the power again.

5.3 Mechanical Adjustments
(Technicians Only)

The processor must be within certain specifications to operate properly and produce the finest output. These specifications are set and checked at the factory. Occasionally, the processor may stray out of the specification range and may require a minor adjustment. Below is a short list of all the mechanical adjustment procedures. Due to electrical and mechanical hazards, ONLY a qualified technician should undertake these adjustment procedures.

- Gear Train Section
- AOX

5.3.a Gear Train Section Adjustment Procedure

Equipment required: 2 pc wrench 10 mm or universal wrenches

Gear train may need adjustment whenever the geartrain has been removed.

1. The gearwheels in the gear train transmit the power from the main drive motor in the dryer section to the drive shafts of the processing racks.

2. The gear train should be adjusted to ensure correct mesh between the 80T gearwheels on the drive shaft at the dev., fix. and wash racks into the 80T gearwheels hidden inside the gear train.

3. Using the 2 pc 10 mm wrenches loosen the 6 pc 6MG bolts and nuts holding the left end of the tanks and the gear train. (Fig. 5-A).

4. Inspect the mesh between gearwheels through the inspection holes in the gear train (Fig. 5-B).

5. Push the gear train up or down until the correct mesh is obtained.
   The correct mesh is obtained when there is 0.5 mm - 1mm air between top of the teeth on one gearwheel and bottom of the gearwheel on the other.

6. When the mesh is correct, tighten the 6 pc 6MG bolts loosened in paragraph 3.
   (Fig 5-A)

7. The dryer section gear train is adjusted in the same way, however there are only 4 bolts here.

6 pc 6MG bolts for adjustment of gear train

Fig. 5-A

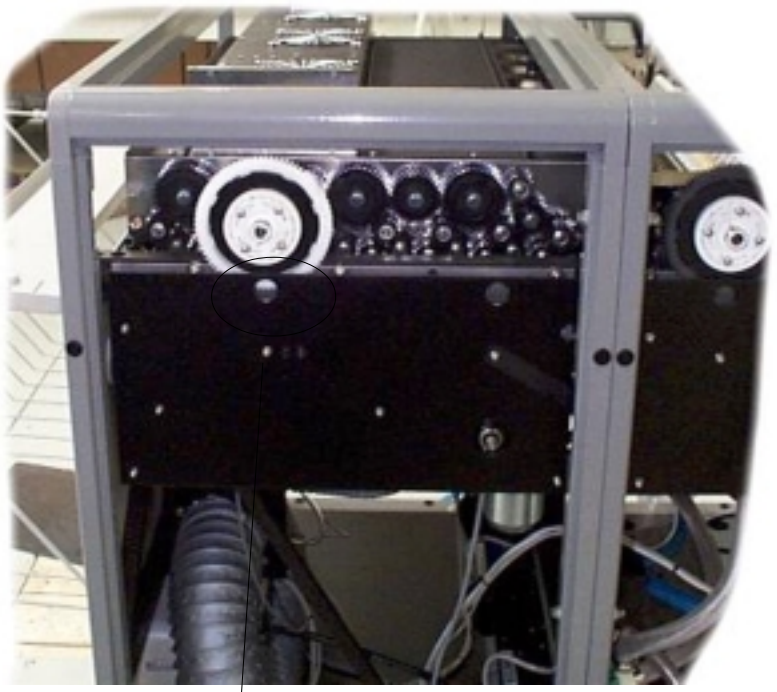


Fig. 5-B. Look for correct mesh.

5.4 Check and adjustments of replenish.

The following explains how to check and adjust the replenish function.

First check that the replenishpulses are correct timed !. Set the speed to 30 Dev/Sec. Check That the processor replenishes every 20 sec´s The singlepulse amount for different models and replenish levels could be expressed as :

Model / (ml/m2)	300	400	500
GL171	40	50	65
GL172	60	75	100
GL173	75	100	130
GL291	65	90	110
GL292	100	135	170
GL293	130	180	220
GL361	80	110	135
GL362	120	165	205
GL363	165	220	280
GL541	120	160	200
GL542	185	250	315
GL543	250	335	415
GL651	145	190	240
GL652	215	285	355

For setting up the replenish and AOX. Please refer to section 4.

Calculations for the Preset of AOX Programme Time

An AOX release every 20 minutes and an AOX programme time of 10 seconds gives per day:

$$3 * 24 * 180 = 13 \text{ litres}$$

Let's say that the evaporation from the respective baths is 200 cc per hour, the accumulated AOX programme should be preset to obtain

$$200 * 24 = 4.8 \text{ litres per day}$$

which gives an AOX programme time of

$$\frac{4.8}{13} * 10 \text{ sec} = 4 \text{ sec.}$$

Normative pumping capacity is 180 cc per 10 seconds.

5.5 Troubleshooting

The Troubleshooting Chart contains symptoms which may occur, and recommended actions to take if these symptoms do occur.

NOTES:

1. In general, check the simplest items first and perform replacements last.

2. ***Electrical troubleshooting should be performed by a qualified technician as hazardous voltages exist on some components and terminal blocks.***

3. A failure can be caused by:

   a. A control panel PCB.
   b. An interface box relay.
   c. The actual hardware component.

To help determine which of the above three is causing the failure keep in mind:

a. If the display responds to the operator controls, then the failure is at either the interface box or the hardware component. If the display does not respond to the controls, then check the PCB.

b. If the display responds to the operator controls and a "click" is heard from the interface box, then the failure is probably at the hardware component (check voltage to component). If no "click" is heard, check for voltage then check the interface box.

WARNING:

When a fuse has failed, replace it with one of the same type, size, and rating. If the replacement fuse or a reset circuit breaker fails, immediately remove power from the system by unplugging the power cord and contact a qualified service representative to inspect the system.

Troubleshooting Chart

Symptom	Probable Cause	Recommended Action
• Output copy characters gray (Light or gray type) (Positive media only)	• Developer temperature low	• Check developer temperature
	• Developer replenishment rate too low.	• Increase replenishment rate
	• Developer replenishment container empty	• Check/refill container
	• Developer injector not operating	• Check injector
	• Developer circulator pump not operating	• Check circulator pump
	• Developer nearly exhausted	• Replace with fresh chemistry
	• Phototypesetter; low intensity (lead edge black, characters gray)	• Consult area service office, adjust typesetter exposure control
	• Speed control set too fast	• Slow down transport speed
	• Contaminated chemistry	• Change chemistry

• Gray background (Positive media only)	• Developer temperature too high	• Check developer temperature
	• Developer contamination	• Dispose of developer; clean developer station
	• Fixer replenishment rate set too low	• Increase replenishment rate
	• Fixer replenishment container empty	• Check/refill container
	• Fixer injector not operating	• Check injector
	• Fixer circulator pump not operating	• Check circulator pump
	• Fixer nearly exhausted	• Replace with fresh chemistry
	• Speed control set too low	• Speed up transport speed
• Background has pinkish tint, film or paper	• Fixer nearly exhausted	• Replace with fresh chemistry
	• Fixer temperature	• Check reset fixer temperature
	• Fixer replenishment container empty	• Check/refill container
	• Fixer replenishment rate set too low	• Increase replenishment rate
	• Fixer injector not operating	• Check injector
	• Fixer circulator pump not operating	• Check circulator pump
• Yellow stain or off white background (Positve media only)	• Low fixer temperature	• Check temperature
	• Wash water loaded with fixer	• Change wash water in recirculator more frequently
	• Wash recirculator/water supply not on	• Turn on recirculator/water
• Processed material has no keeping properties	• Wash water in recirculator dirty or contaminated with fixer	• Change wash water more frequently to optimize keeping properties
	• Wash recirculator/water supply not on	• Turn on recirculator/water
• Background turns yellow with age	• Wash recirculator's water exhausted	• Change wash more frequently
• No electrical activity	• Main switch tripped	• Place main switch ON
	• Power plug fell out	• Check power plug receptacle
	• Main fuse blown	• Check/replace fuse
	• House circuit breaker	• Check house circuit breaker
	• Main switch/circuitry	• Check wiring at switch/replace
	• Power receptacle out of specification	• Check receptacle and wiring (see paragraph 3.2)
	• Interface box fuse blown	• Replace fuse
	• (Vent. blower only operating)	
• Pumps OK but rollers do not turn	• Rollers will not turn in stand-by	• Check mode
	• Drive pulley slipping	• Check pulley at end of drive shaft and motor
	• Drive belt defective	• Check/replace drive belt
	• Drive motor wiring circuit open	• Check drive motor wires
	• Drive motor defective	• Check/replace drive motor
	• Speed control fuse blown	• Check/replace fuse

	• Speed control PCB defective • Speed control interface relay defective • Low level condition	• Check/replace speed control PCB • Check/replace interface box • See tanks not filling
• Tank(s) not filling	• Tanks will not fill from container when empty • Replenishment container empty • Injector wiring open circuit • Injector malfunction • Recirculator pump not pumping • Pump assembly defective • A low level condition for more than 40 seconds.	• Fill tanks partly • Ensure container filled • Check injector wires • Check/replace injector • Check/replace pulse generator PCB, replenishment/AOX PCB, level PCB, motherboard PCB • Check/replace interface box • Pump wiring open circuit • Check/replace pump • See tanks not filling
• Heater light on; developer/fixer not heating	• Temperature probe defective • Heater wiring disconnected • Heater defective • Thermostat PCB defective	• Check/replace temperature probe • Check heater electrical connections • Check/replace heater • Check/replace PCB
• Heater light not working when the processor is turned on	• No power at receptacle • Ambient temperature more than set temperature • Chemistry at set temperature • Defective thermostat PCB • Temperature probe not working • Open circuit • Interface relay defective	• See no electrical activity • Cool down processor environment • No action/reset temperature • Replace PCB • Check/replace probe • Check wires • Check/replace interface box
• Material wraps around rollers	• Jumping rollers • Rollers dirty, sticky • Contaminated wash water • Contaminated or weak chemistry • No/poor water flow • Lead edge need fold • Too much silver in fix (> 7 g/l) • No hardener in fix (pH > 5.5.)	• Ensure the transport guides are clicked into place • Clean rollers • Change wash water more frequently • Change chemistry • Check water flow • Fold lead edge • Replace fixer • Add hardener
• Foaming	• Replenishment container empty • Developer depleted • Fixer depleted • Air in pump	• Ensure container filled • Change developer • Change fixer • Check hose connections for air leak
• Fluid leakage	• Cracked hose connection • Cracked tank connector • Hose leaking	• Repair hose connection • Check/replace tank connector • Check hose and hose clamps,

		replace if necessary
	• A bend in drain hose	• Ensure all drain hoses are straight
	• Tank drain clogged	• Unclog drain
	• Drain hose too long	• Cut hose to fit
• Material wraps around dryer rollers	• Jumping rollers	• Ensure the crossover guides are properly seated
	• Dryer entrance roller are dirty, sticky	• Clean rollers
	• Lead edge requires fold	• Fold lead edge
	• No/poor water flow	• Check water flow
• Blower works, but no heat	• Loose heater terminal connection	• Check heater connections
	• Heater defective	• Check/replace heater
	• Blown interface box fuse	• Check/replace fuse
• Heater works, but no blower	• Loose blower terminal connection	• Check blower connections
	• Blower defective	• Check/replace blower

Note: the heating elements are 110 V types connected in series in pairs.

6.1 General

This section details the general and specific tasks which are to be performed by a trained service engineer for removal and replacement of the processor's components.

Before starting any procedure read the WARNINGS listed below.

WARNINGS:

a. ***Turn off the main switch and lock by a padlock before starting a procedure.***

b. ***Never allow loose clothing or jewelry to come close to the gear train, media transport area, an electrical connection, or any terminal block.***

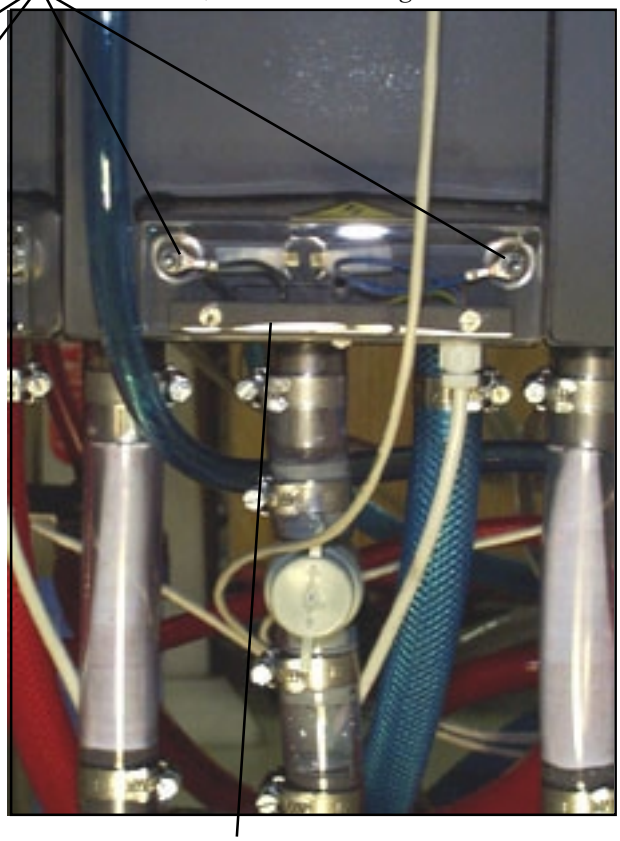
c. ***Before starting any procedure that involves working on one of the fluid circulating stations, always drain the system thoroughly.***

6.2 Removal/Replacement Procedures

Below is an alphabetical list of all the Removal/Replacement Procedures outlined in this section:

PROCEDURE DESCRIPTION
Chemistry Heating Elements
PCBs
Drive Motor
Dryer Fans
Dryer Heating Elements
Fuses
Gear train
Gearwheel
Interface box
Low Level Sensors
Pumps/Injectors
Rollers, Gears, Bearings, and Transport Guides
Sensor
Temperature Probe
Water Valve

Bottom Mounted Heating element



Side Mounted Heating element

Fig. 6-A

6.2.a Chemistry Heating Elements Removal/Replacement Procedure

Equipment Required: Small screwdriver, Open end wrench, Tubular wrench # 19

1. ***Turn the main power switch OFF and lock by a padlock.***
2. Drain the chemistry.
3. Remove roller rack in the relevant tank.
4. Remove the cover over the connection of the heating element.
5. Disconnect the wires from the heating elements by the two 4 MG nuts.
6. Remove the two 14 MG nuts holding the heating element in the tank. Use a pair of pliers to hold the element on the inner side. Clean the surfaces around the holes in the tank and mount the new element with new gaskets inside the tank. Tighten the 14 MG nuts while holding counter inside the tank.
7. Replace the wires into the terminals and tighten the screws (fig. 6-A). See task 5.
8. Place the cover over the connection again by its 2 screws.

6.2.b PCBs Removal/Replacement Procedure

Equipment Required: Common screwdriver

1. ***Turn the main power switch OFF and lock by a padlock.*** The power cord can be left connected if an electronic adjustment is being performed.

2. Remove the seven (4) screws on the front of the Interface Box (fig. 6-B).

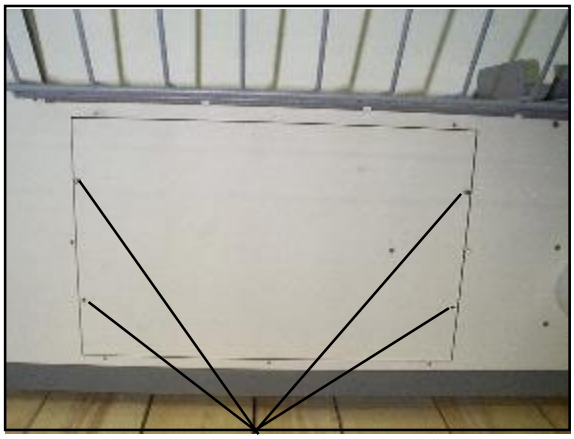


Fig. 6-B. Remove the 4 screws shown.

Fig. 6-c. view of motherboard..

WARNING:

To prevent damage to the PCBs always turn the processor off and wait 15 sec. before pulling out or plugging PCBs or connectors.

3. The PCBs can now be removed or adjusted.

4. Place the front and replace the seven (4) screws removed in task 2.

6.2.c Drive Motor and Gearwheel in Dry Gear Train Removal/Replacement Procedure

Equipment Required
- 7 mm wrench
- Common screwdriver
- A pair of pliers
- Side cutting pliers

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Remove the side panel on the left side of the dryer section and remove the 6 pc 4MG nuts on the gear train.

3. Lift the gear train spacer off the screw and remove the cover over the gear train.

4. Remove the cotter pin holding the gearwheel to the motor axle and remove the gearwheel.

5. Remove the necessary gearwheels to obtain access to the 3 countersunk screws holding the motor.

6. Unscrew the 3 countersunk screws holding the motor, keep track of the spacers and washers behind the plate between motor and plate.

7. Note the wire locations and disconnect the two electrical connections.

REPLACEMENT MOTOR INSTALLATION

8. Reconnect the two electrical connections to the replacement motor.

9. Place the motor into its mounting bolts. Remember the distance tubes.

10. Place the motor gearwheel onto the motor shaft and mount a new cotter pin.

11. Reassemble the cover to the gear train, remember to reinstall the gear train spacer.

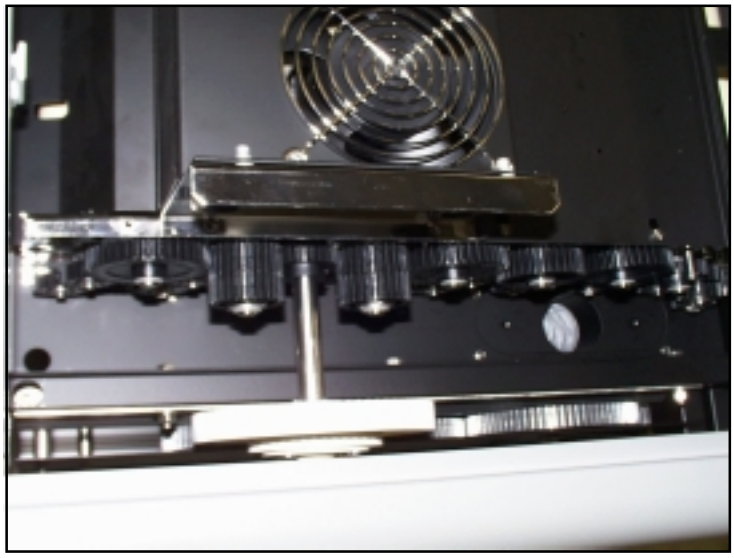


Fig.65a
Gear train, top view

Fig.65b
Gear train and drive motor position in processor.

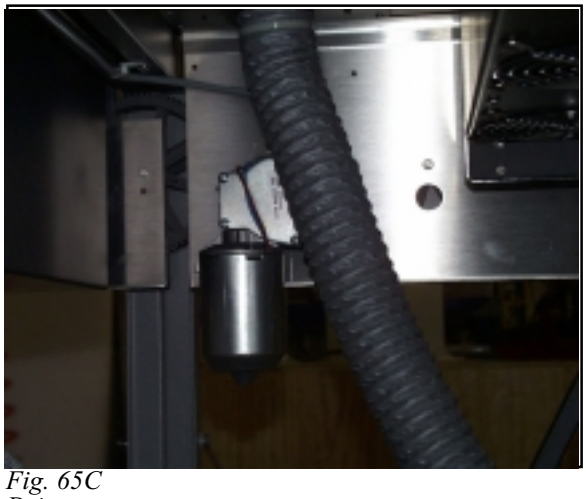


Fig. 65C
Drive motor

6.2.d Dryer Fans Removal/Replacement Procedure (Horizontal Dryer)

Equipment Required: Common screwdriver, Small common screwdriver

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Get access to both sides of the involved blower channel by lifting off the upper blower channel or removing the dryer rack with the blower channel.

3. Remove the 4 screws holding the blower to the chassis.

4. Note the wire positions and unscrew the two blower wires from the terminal block, disconnect the yellow/green ground wire.

5. Remove and replace the blower, make sure to install the new blower with correct flow direction.

6. Remount the 4 screws, be sure to use the original washers, the safety screen, and the bracket for the heating element again.

7. Mount the two wires in the correct position of the terminal block. Remove the paint where the yellow/green ground wire is mounted and secure the wire with its screw.

8. Reinstall dryer rack and blower channel.

Fig. 6-D

6.2.e Dryer Heating Elements Removal/Replacement Procedure (Horizontal)

Equipment Required: Common screwdriver, Small common screwdriver

1. ***Turn the main power switch OFF and lock by a padlock.***
2. Get access to both sides of the involved blower channel by lifting off the upper blower channel or removing the dryer rack with the blower channel.
3. Remove the two screws holding the stainless bracket for the heating element to the blower.
4. Disconnect the two wires from the heating element and unscrew the yellow/green ground wire.
5. Cut the wire from the safety thermostat and pull it out from its rubber fitting.
6. Unscrew the heating element from its bracket and replace with the new heating element.
7. Install the rubber fitting for the safety thermostat from the old heating element.
8. Remount the safety thermostat and tie it to the heating element with a piece of uninsulated wire.
9. Reconnect the wires and the yellow/green ground wire.
10. Reinstall the bracket with heating elements on the blower channel.

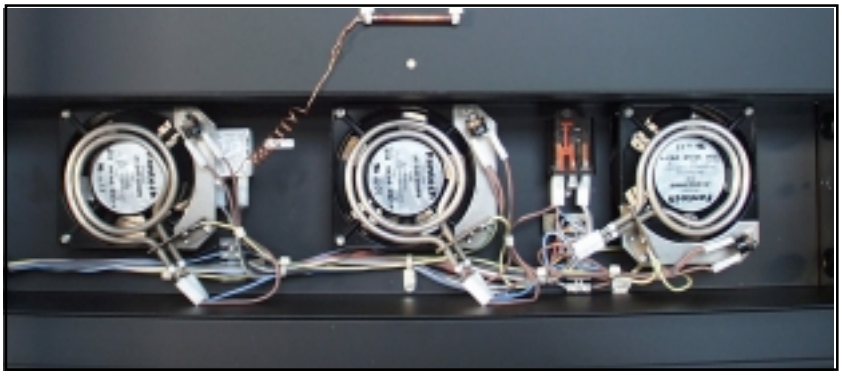


Fig. 6-E

6.2.f Fuse Removal/Replacement Procedure

The processor has one fuse:

1 4-pole main circuit breaker
Interface power fuse - Internal

WARNING:

When a fuse has failed, replace it with one of the same type, size and rating. If the replacement fuse fails, immediately remove power from the system by turning off the main switch and contact a qualified service representative to inspect the system.

1. ***Turn the main power switch OFF and lock by a padlock.***

- The interface box is situated below the feedtray and covered by a cover with ventilation openings.
- Remove the interface box cover and replace the blown fuse or switch in the main circuit breaker again.
- Replace the interface box cover.

Primary interface fuse

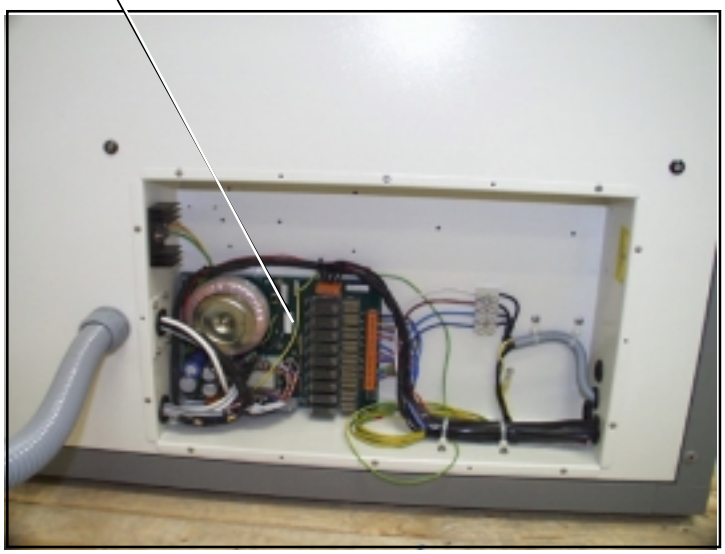


Fig 6-F

6.2.g Wet Section Gear Train Removal Replacement

1. ***Turn off the main switch and lock by a padlock.***

2. Lift out the developer, fixer and wash processing racks (be careful not to spill any fixer into the developer).

3. Loosen the nut on the outside of the gear train on the last gearwheel towards the dry section. Lift off the gear train spacer from the screw and swing the spacer down.

4. Remove the 6 pc 6MG nuts and their flat and spring washers holding together the tanks, the frame, and the gear train. Do not try to remove the bolts as the tanks are still hanging in them.

5. The gear train can now be removed.

6. Reinstallation goes in reverse order. Refer to Section 5.3.a to adjust correct mesh.

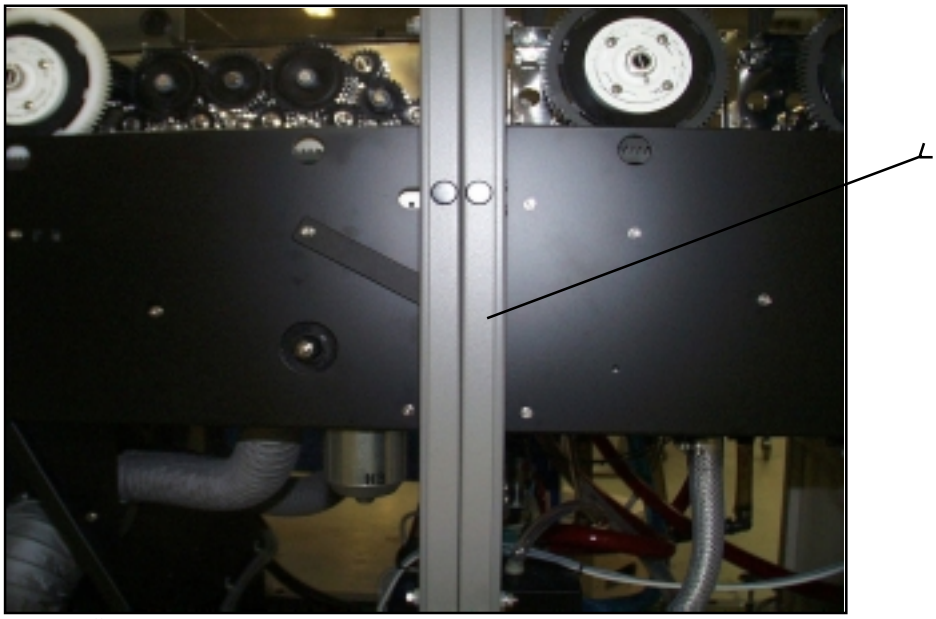


Fig. 6-G

Fig. 6-H

6.2.h Gearwheel in Wet Section Removal/Replacement

1. Remove the nuts and washers on the front side of the gear train, lift the gear train spacer off the screw and remove the cover.

2. The gearwheels can now be replaced.

   Note:
   The axle has a thread inside and is mounted by a through-going screw from the rear side of the gear train. This screw must be completely tight.

3. The cover and nuts are replaced and tightened.

Fig. 6-I

6.2.j Pump Removal/Replacement Procedure

Equipment required
- 7 mm box screwdriver (wrench)
- Common screwdriver
- Pliers
- Screw clamp for squeezing hose

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Drain the tank associated with the pump to be replaced. The chemistry remaining in the tubes and the pump housing may be removed by carefully blowing compressed air into the suction studs in the tank. Be careful not to blow too hard - or chemistry drops will splash all over.
   Instead of draining the tank both tubes to the pump may be closed by squeezing the tubes with a screw clamp 20 cm from the pump - in this case be ready to collect chemistry draining out when the tubes are removed from the pump.

3. Remove the hose clamps from the tubes on the pump and remove the tubes, be ready to collect chemistry draining out from the tubes.

4. Remove the cover over the cable channel and disconnect the electrical wires.

5. Remove the 4 pc 4MG set screws holding the pump to the pump rail.

6. Reinstallation goes in reverse order.

Fig. 6-K

6.2.k Rollers, Gears, Bearings and Transport Guides Removal/Replacement Procedure

Equipment Required: Common screwdriver, Side cutting pliers, Pliers

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Lift the rack to be repaired out of the processor and place it in a tray or a sink.

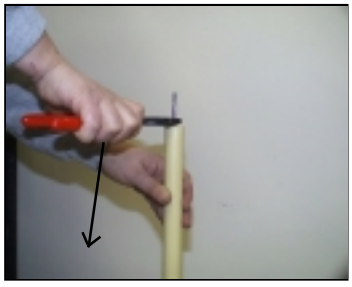
NOTE:

It is recommended to flush developer and fixer racks with water before any major work to protect against skin irritation and tools rusting.

3. **Removing Rack Main Gearwheels**
   The main gearwheels are retained on the studs on the rack side with a plastic lock washer, which can be lifted off with a screwdriver or a small pair of pliers. The number and position of distance washers should carefully be noted. When the gearwheel is reinstalled it is recommended to use a new lock washer.

4. **Removing Rollers**
   The stainless steell lock washers on each end should be cut off with side cutting pliers. In the dryer rack nylon lock washers are used. Now with most of the rollers they can be pushed to the end with the D-axle, and the other end can be lifted out from the rack.

5. With a few of the rollers which have two long axles, it is necessary to remove one of the axles from the rollers to remove the rollers.



6. The axles can be pulled out from the roller by gripping the axles with a side cutting pliers, resting the jaws against the end of the roller. Now the axle can be worked out. Take care not to damage the part of the axle running in the bearing.

7. The bearings are pushed into the rack sides and can only be exchanged when the rollers have been removed. When a rack is being serviced all bearings with more than 1 mm play should be replaced.

8. The axles are tapped into the end of the rollers with a hammer, normally so far that the knurling just disappears. The axial play of the gearwheels on the roller should be closely examined. It may be necessary to tap some of the axles further in to secure correct mesh of gearwheels and prevent collision.

9. When the rollers are remounted be careful to install the correct washers, pulleys, and springs, if any. Lock the gears with new lock washers.

10. Turn the rack by hand and make sure that it turns smoothly and easily with no jumps.

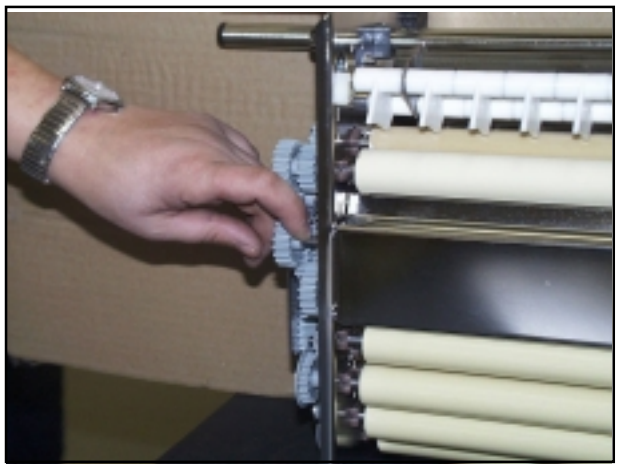


Fig. 6-O

6.2.1 Feed Sensor Removal/Replacement Procedure

Equipment Required
- Common screwdriver
- Small screwdriver
- Side cutting pliers
- Cable straps

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Remove the 7 screws on the front of the control box and remove the control box.

3. The interface box is situated below the feedtray and covered by a cover with ventilation openings. Remove the interface box cover.

4. Unplug the sensor plug PL14 from the IR sensor Amplifier board. With a small screwdriver push out the terminals from the plastic plug (fig. 6-M).

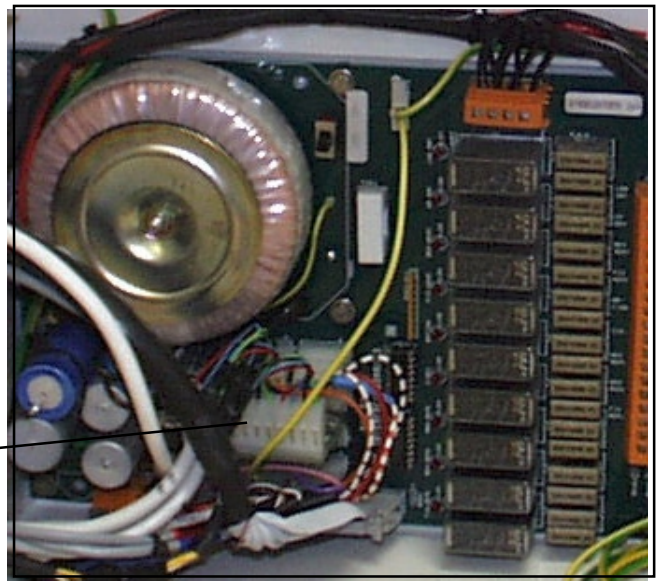


Fig. 6-M

5. Trace the sensor cable backwards out of the interface box through the hole in the bottom. Cut the cable straps on the cable tree in the left side of the processor underneath the developer tank. Pull the cable up to the sensor.

6. Loosen the 4MG screw holding the black sensor bracket to the inlet guide. Exchange the old and the new sensor on the sensor bracket and reinstall the sensor bracket on the inlet guide. The inlet sensor should be pushed cown as far as possible. The distance between the feedtray and the inlet guide should be max. 3 mm. (Fig 6-N).

Fig. 6-N

7. Install the sensor cable in the same path to the interface box as it was removed from in § 4, and tie the cable tree together again with cable straps.

8. Refer to diagram 5965 (Section 7) and install the terminals in the plug. Plug the sensor plug PL14 into the interface board again.

9. Reinstall the interface box cover, see Section 5 § 5.4 concerning adjustment of sensitivity.

6.2.m Temperature Probe Removal/Replacement Procedure

quipment Required
Common screwdriver
Small screwdriver
13 open end wrench

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Remove the 4 (four) screws holding the cover over the interface box. (Fig. 6-P).

3. Unplug PL 13 from the interface PCB. With a small screwdriver push the locking tap on the terminals down and prize the terminal out from the nylon part, fig. 6-Q.

Fig. 6-P *Remove screws*

4. Unplug the sensor plug PL14 from the interface board. With a small screwdriver push out the terminals from the plastic plug, fig. 6-Q.

5. Drain the tank where the temperature probe is to be replaced, fig. 6-R.

6. With a # 13 open end wrench unscrew the temperature probe from the bottom of the tank on the left side of the processor.

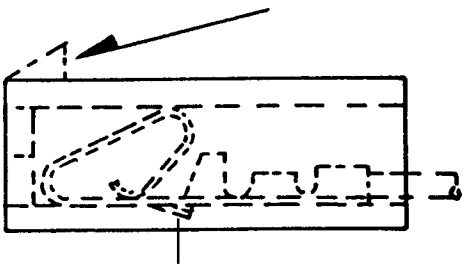


Fig. 6-Q

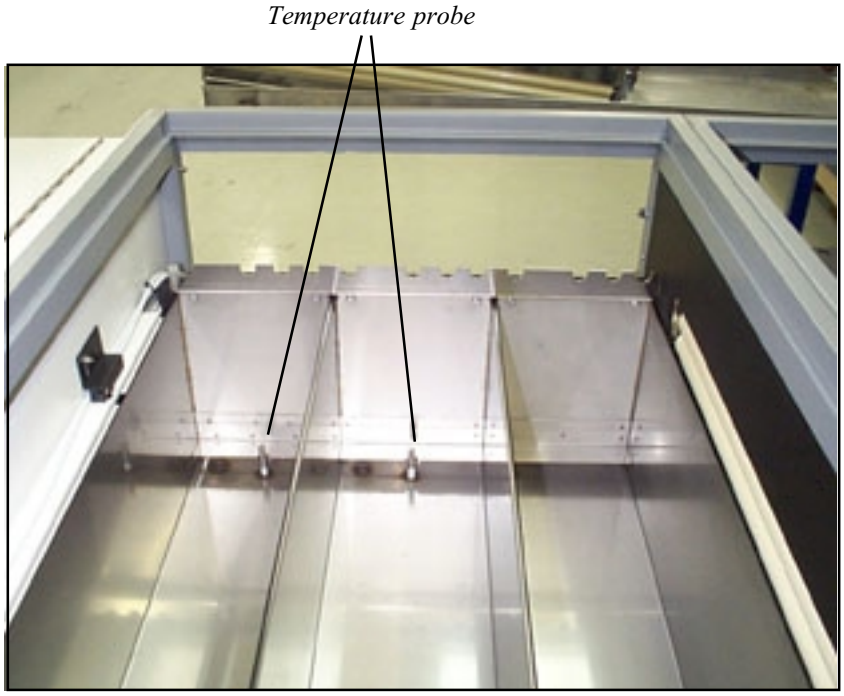


Fig. 6-R

7. The new temperature probe must be tightened with teflon tape before installation. Screw the new probe in by a # 13 open end wrench.

8 Install the sensor cable in the same path to the interface box as it was removed from in § 4, and tie the cable tree together again with cable straps.

9. Refer to diagrem 5965 (Section 7) and install the terminals in the plug. Plug the sensor plug PL14 into the interface board again.

10. Reinstall the cover for the interface box and fill the tank.

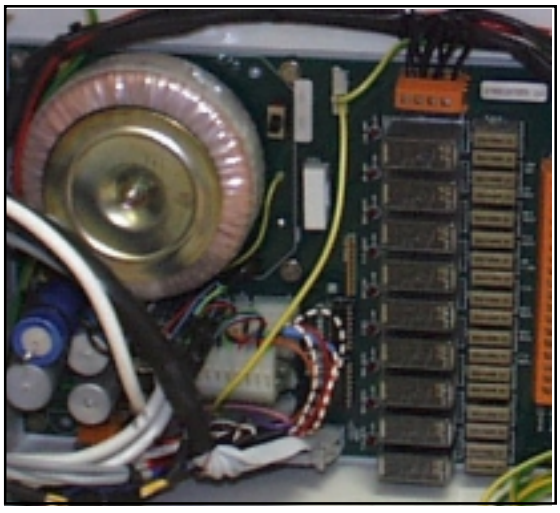


Fig. 6-S

6.2.n Water Valve Removal/Replacement Procedure

quipment Required
Common screwdriver
Adjustable wrench
Small pipe wrench
Universal pliers

1. ***Turn the main power switch OFF and lock by a padlock.***

2. Turn off the water supply and disconnect the water supply hose from the solenoid valve.

3. Unscrew the housing for the solenoid valve from the pump support under the wash tank.

4. Pull off the electrical connections from the solenoid valve, disconnect the hose from the solenoid valve inside the machine and remove the two 4 MG screws that holds the solenoid valve.

5. Mount the new valve its position by its two 4 MG screws and push on the electrical connection.

6. Reinstall the two hoses.
   The hose clamp on the internal tube must be retightened a week later.

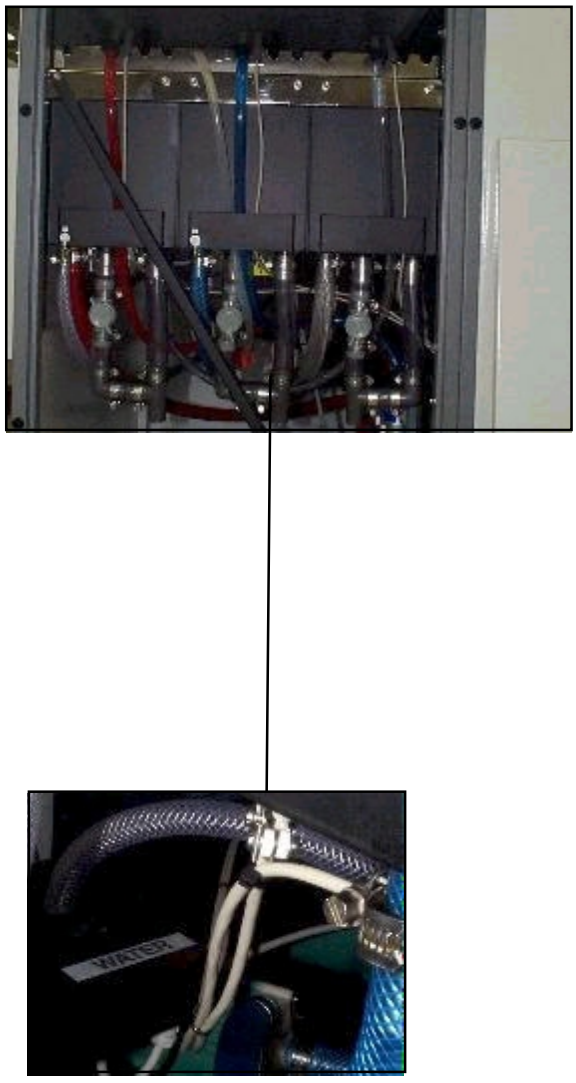
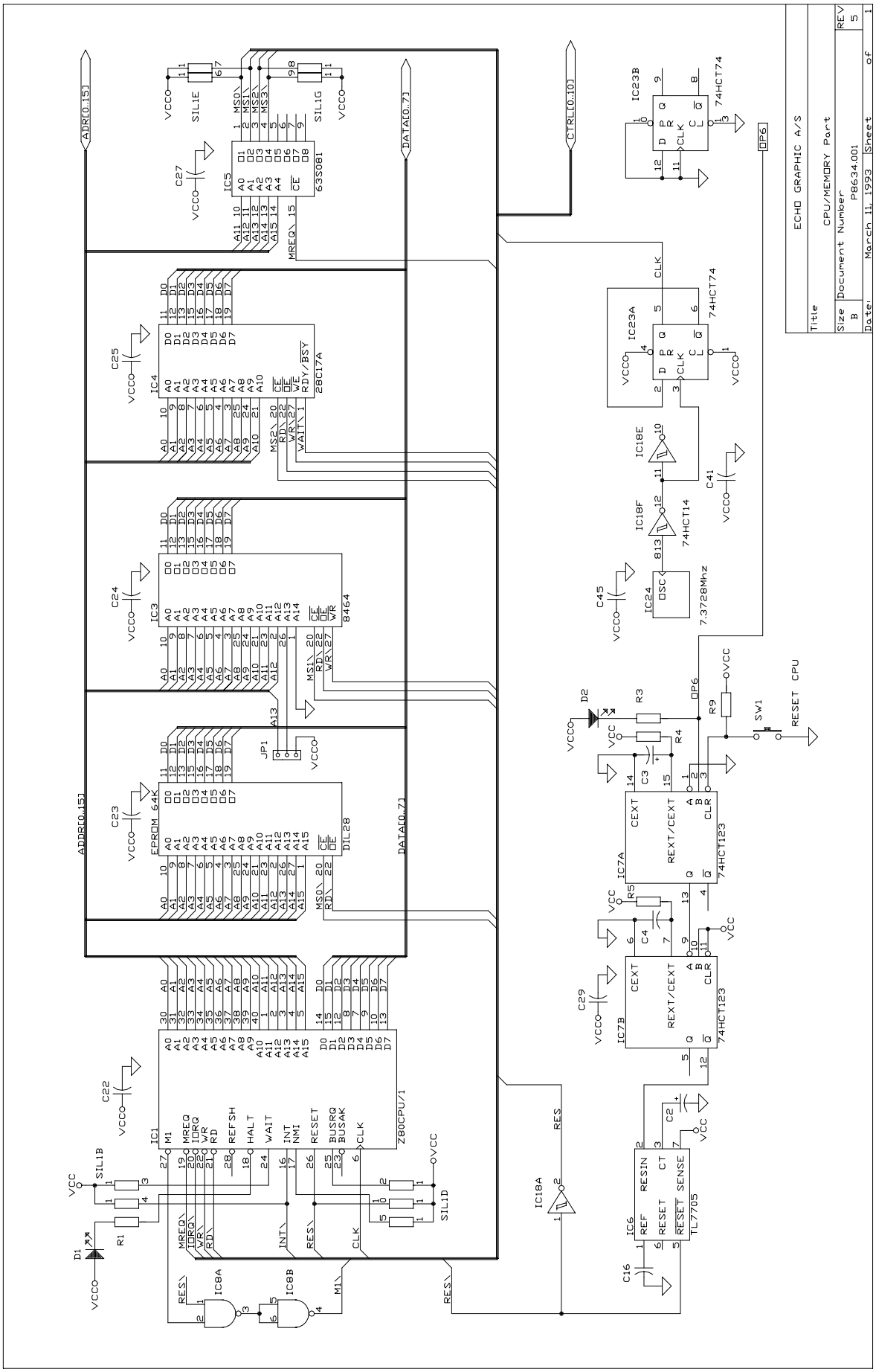


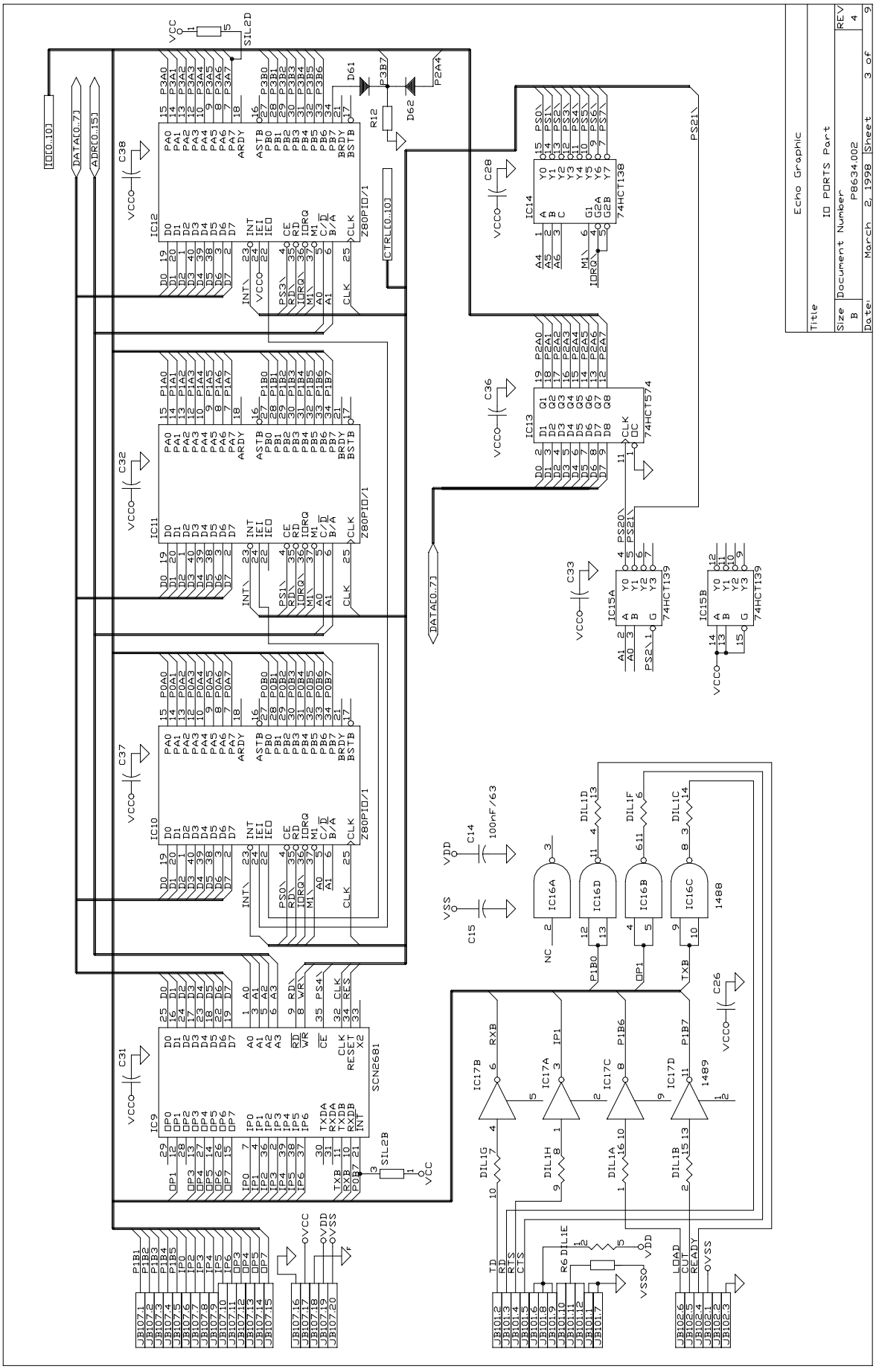
Fig. 6-T

TABLE OF CONTENTS

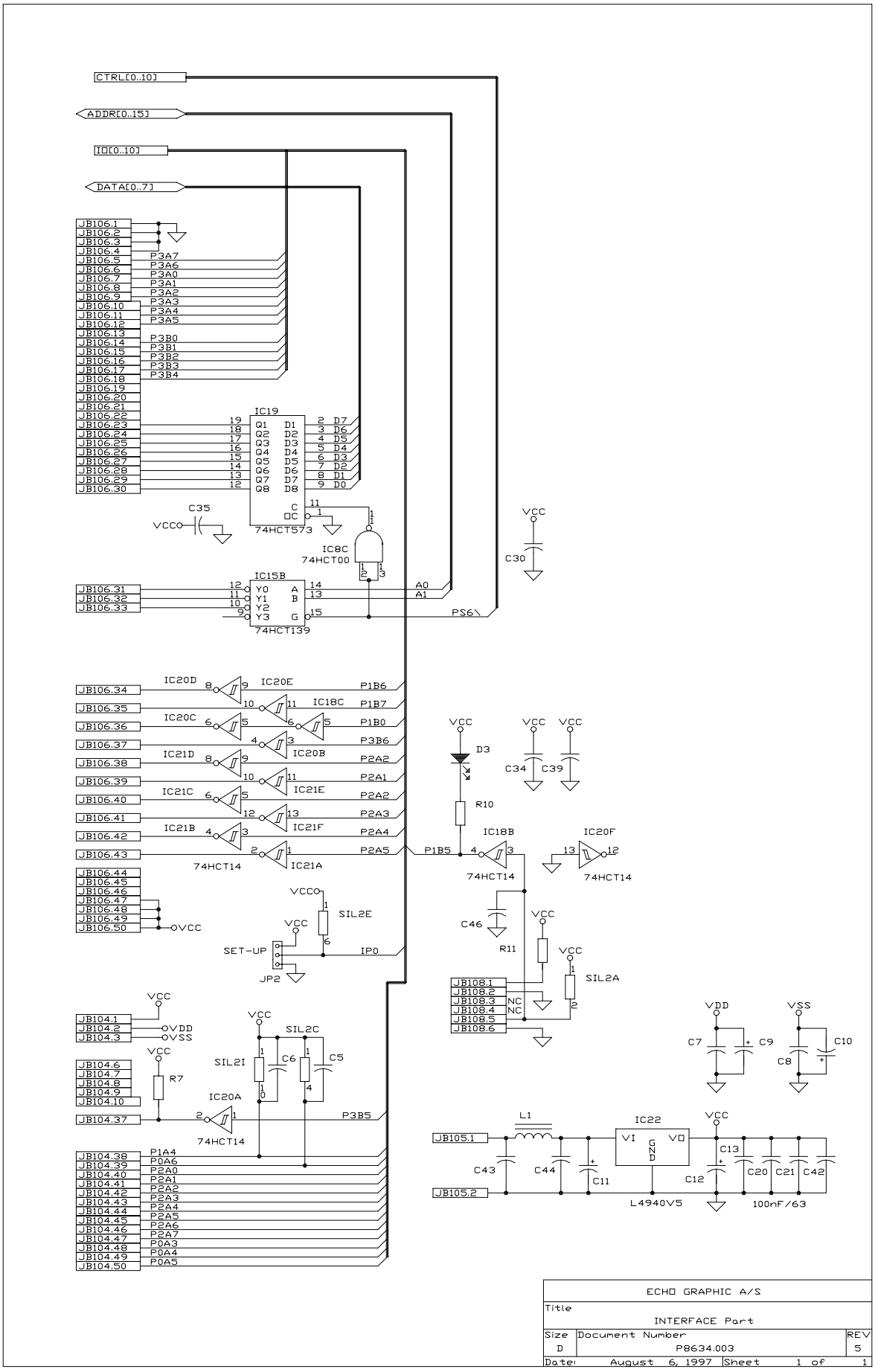
Electrical Drawing:



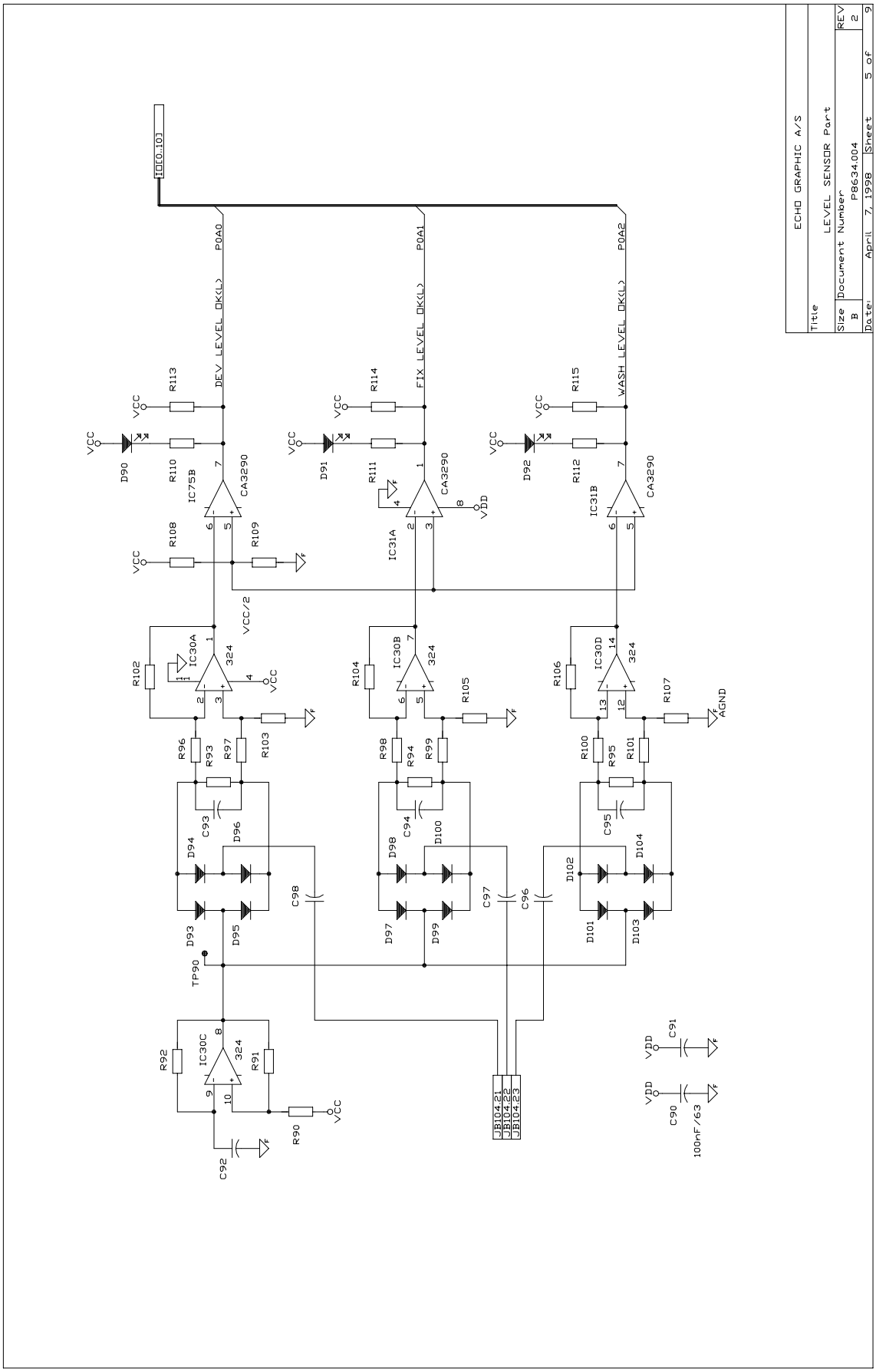
CPU Memory Part



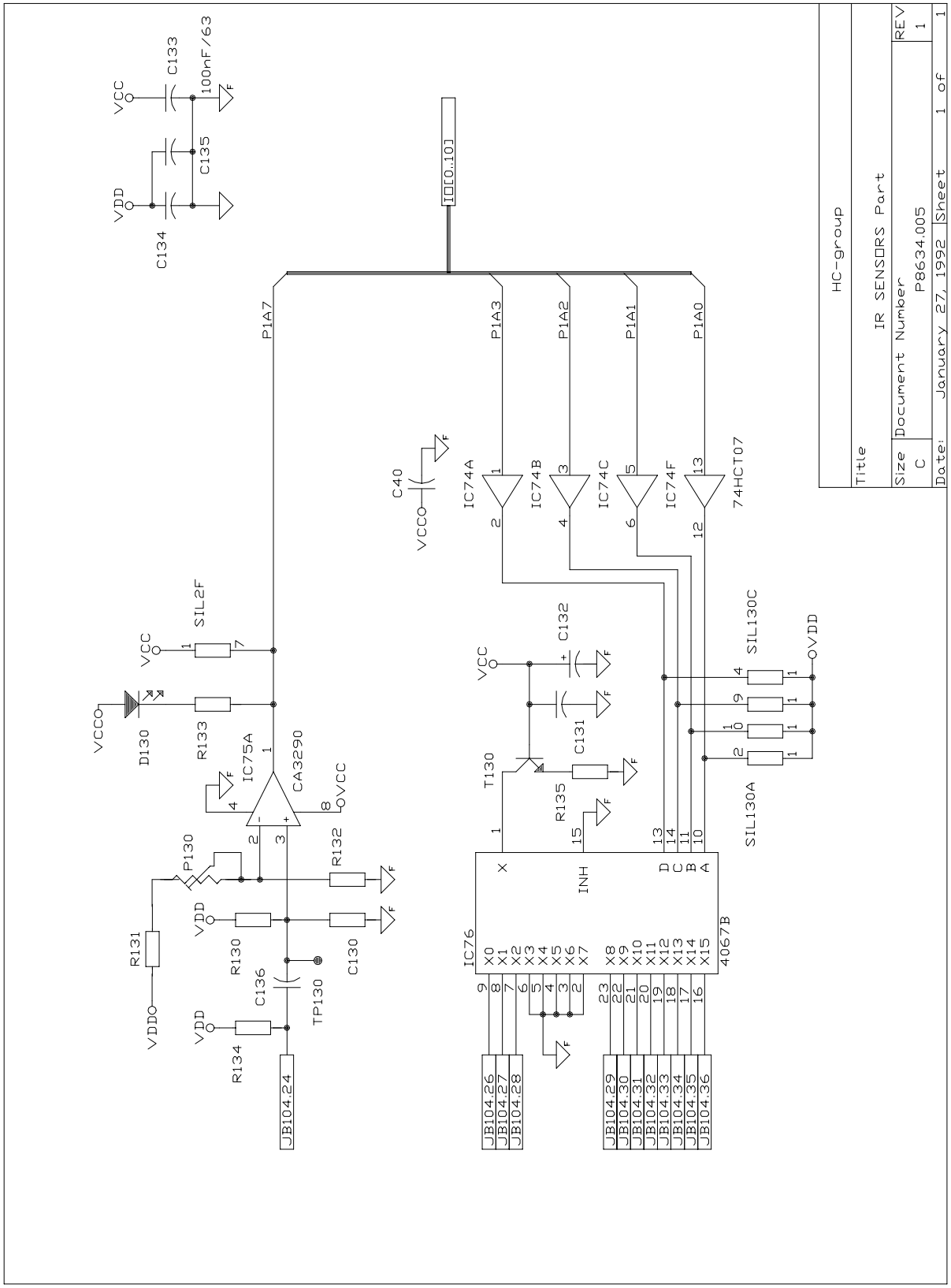
IO Ports Part



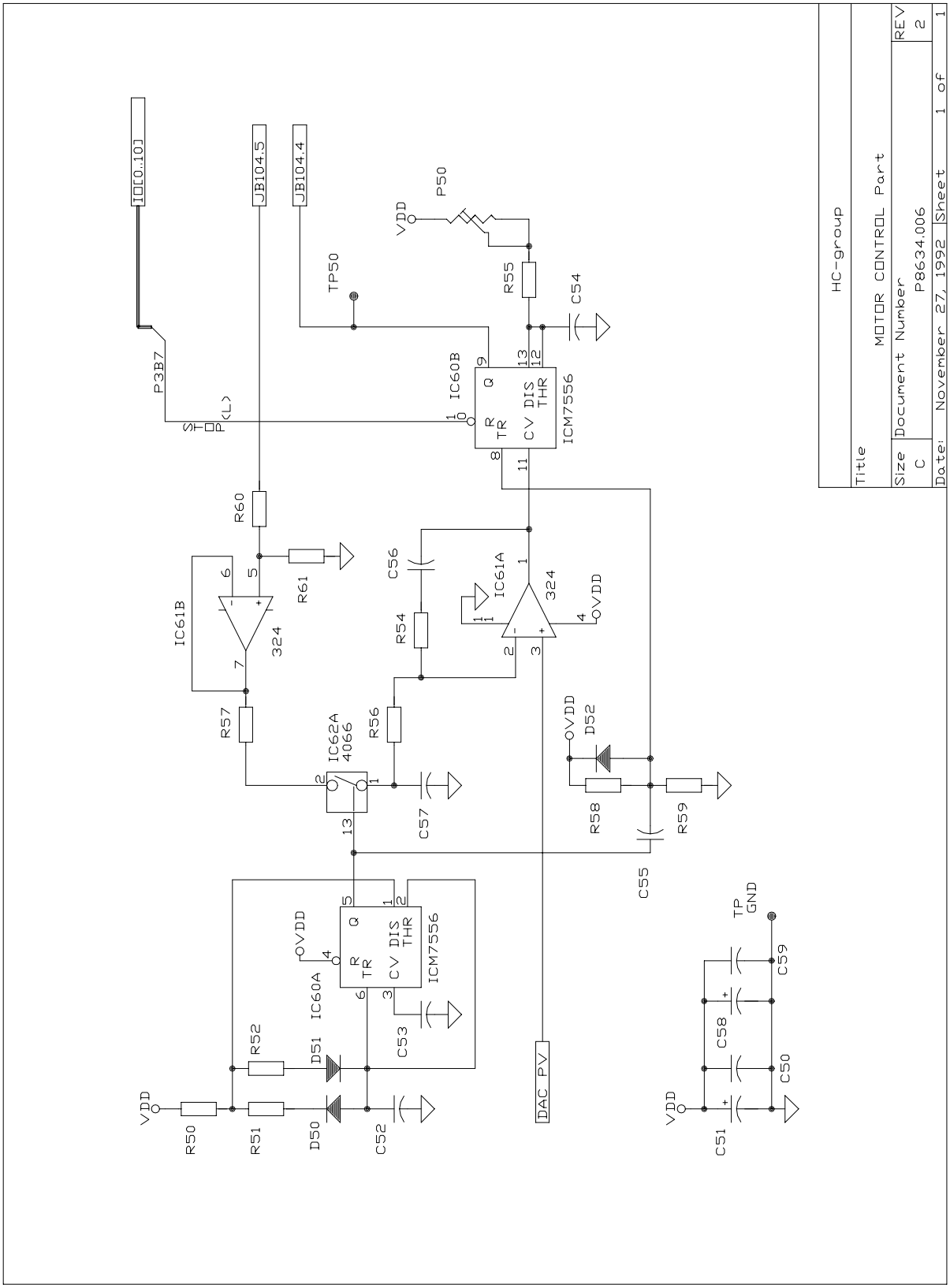
Interface Part



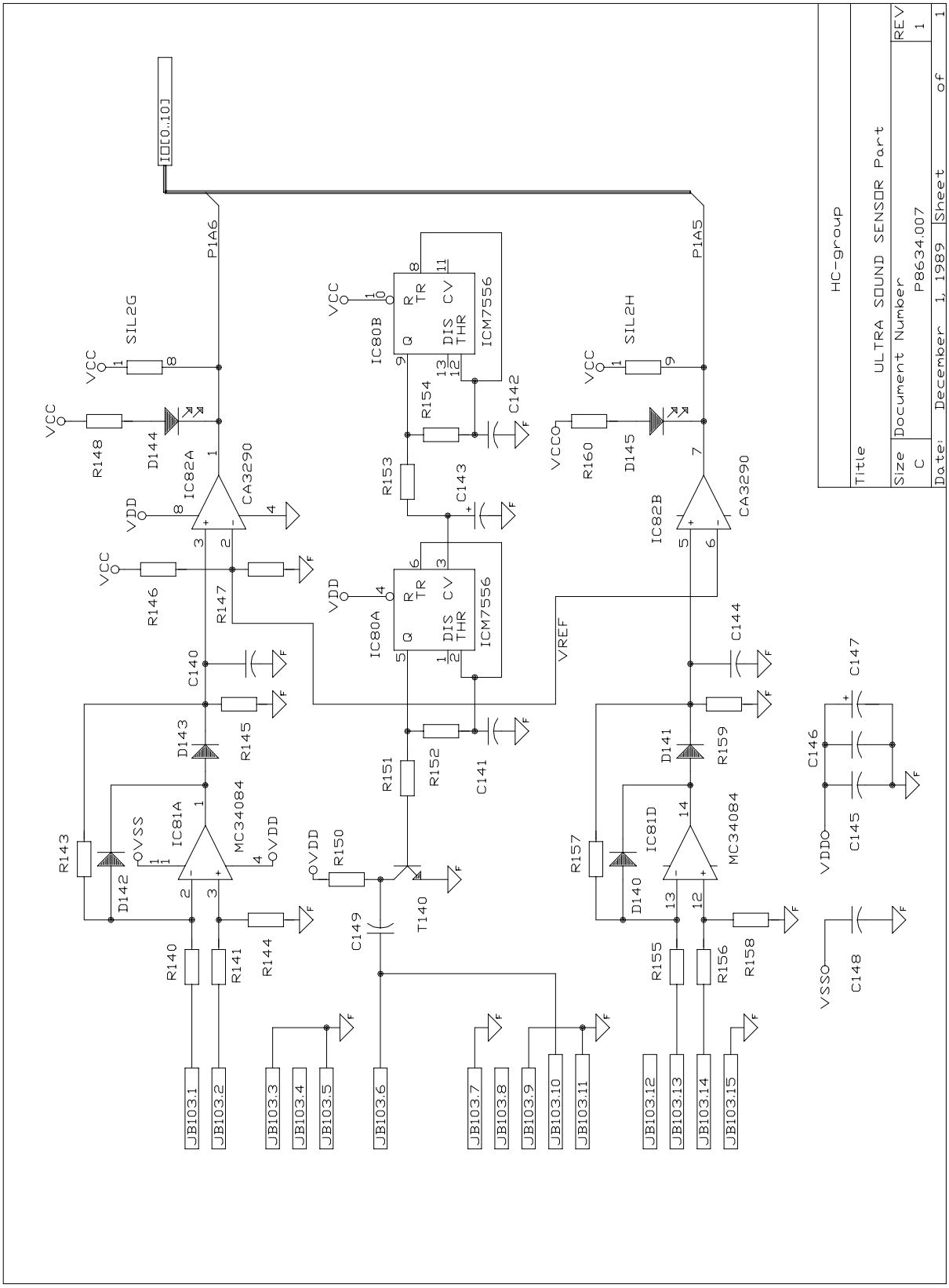
Level Sensor Part



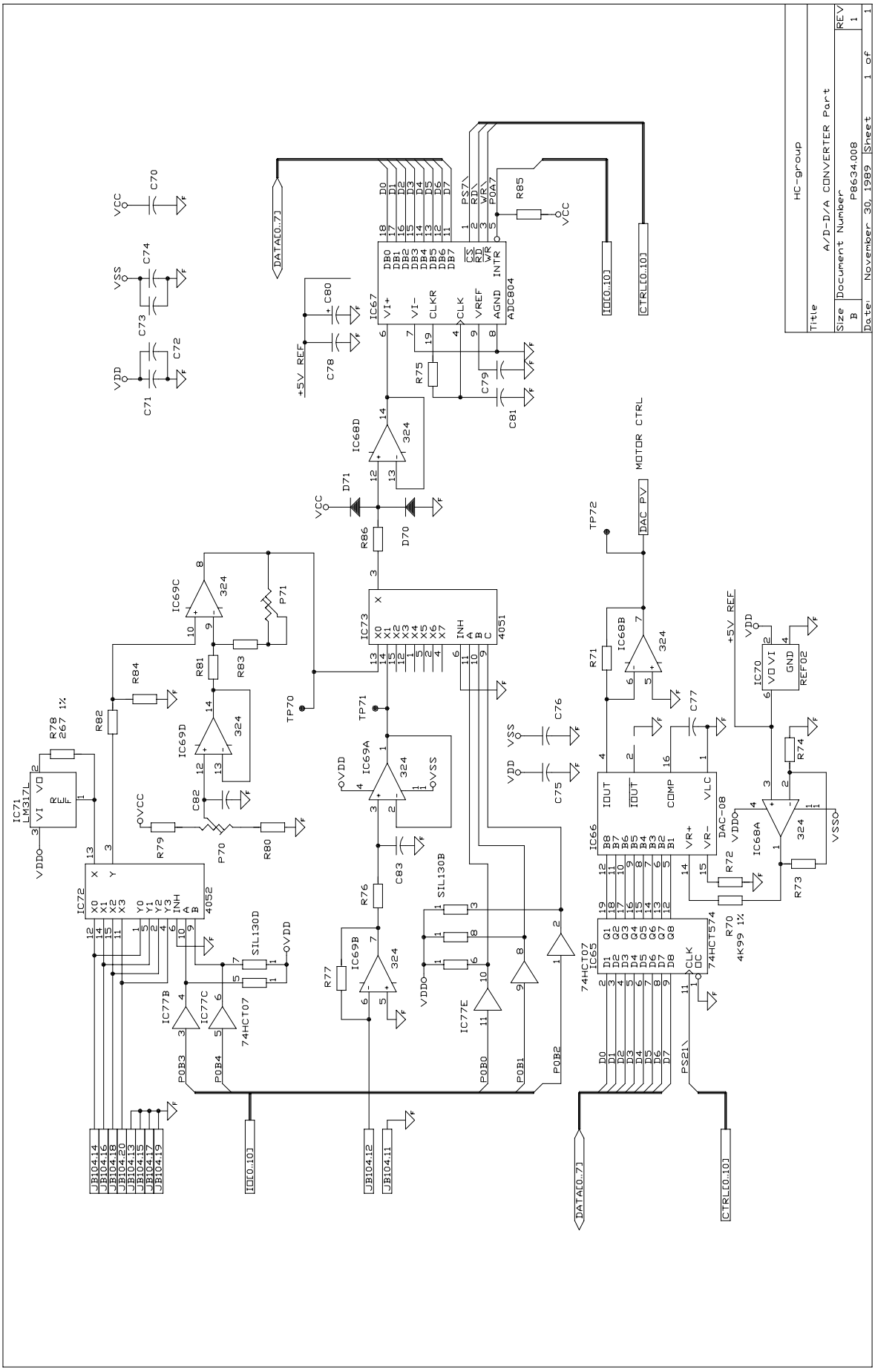
IR Sensors Part



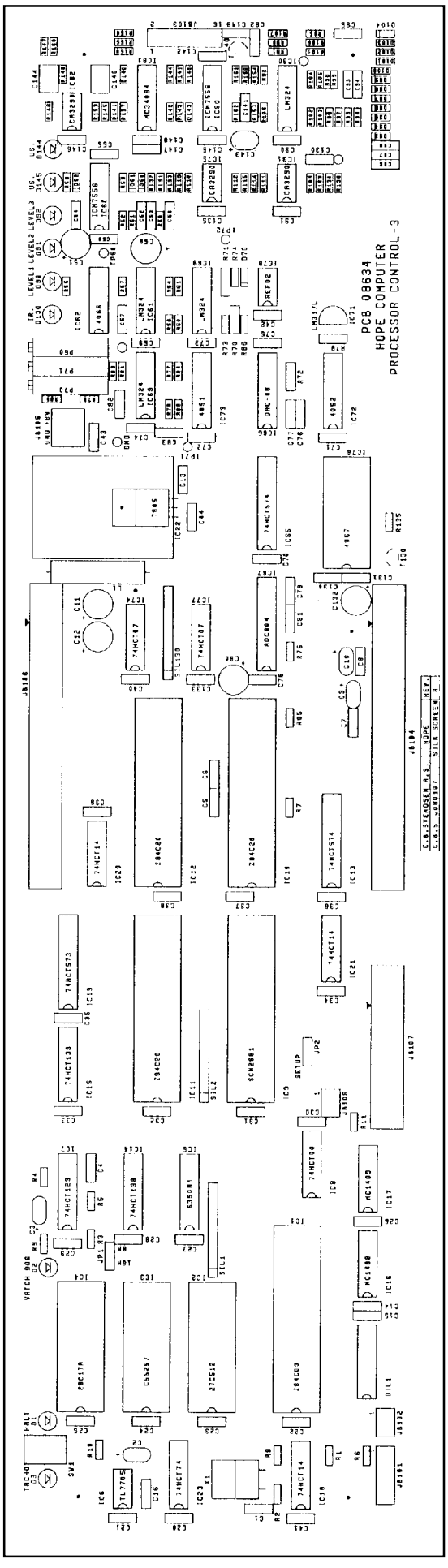
Motor Control Part



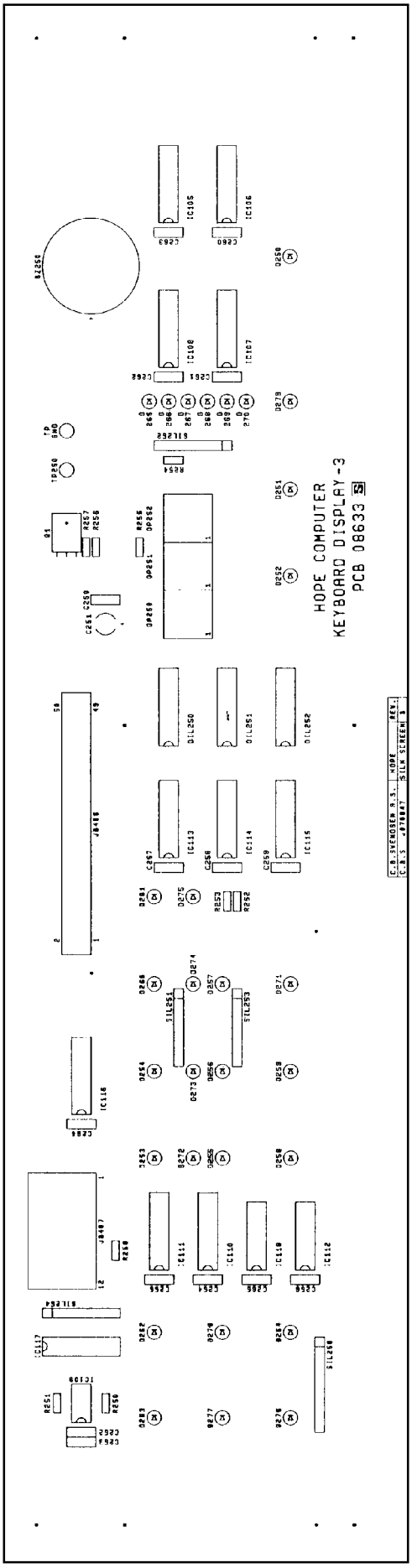
Ultra Sound Sensor Part



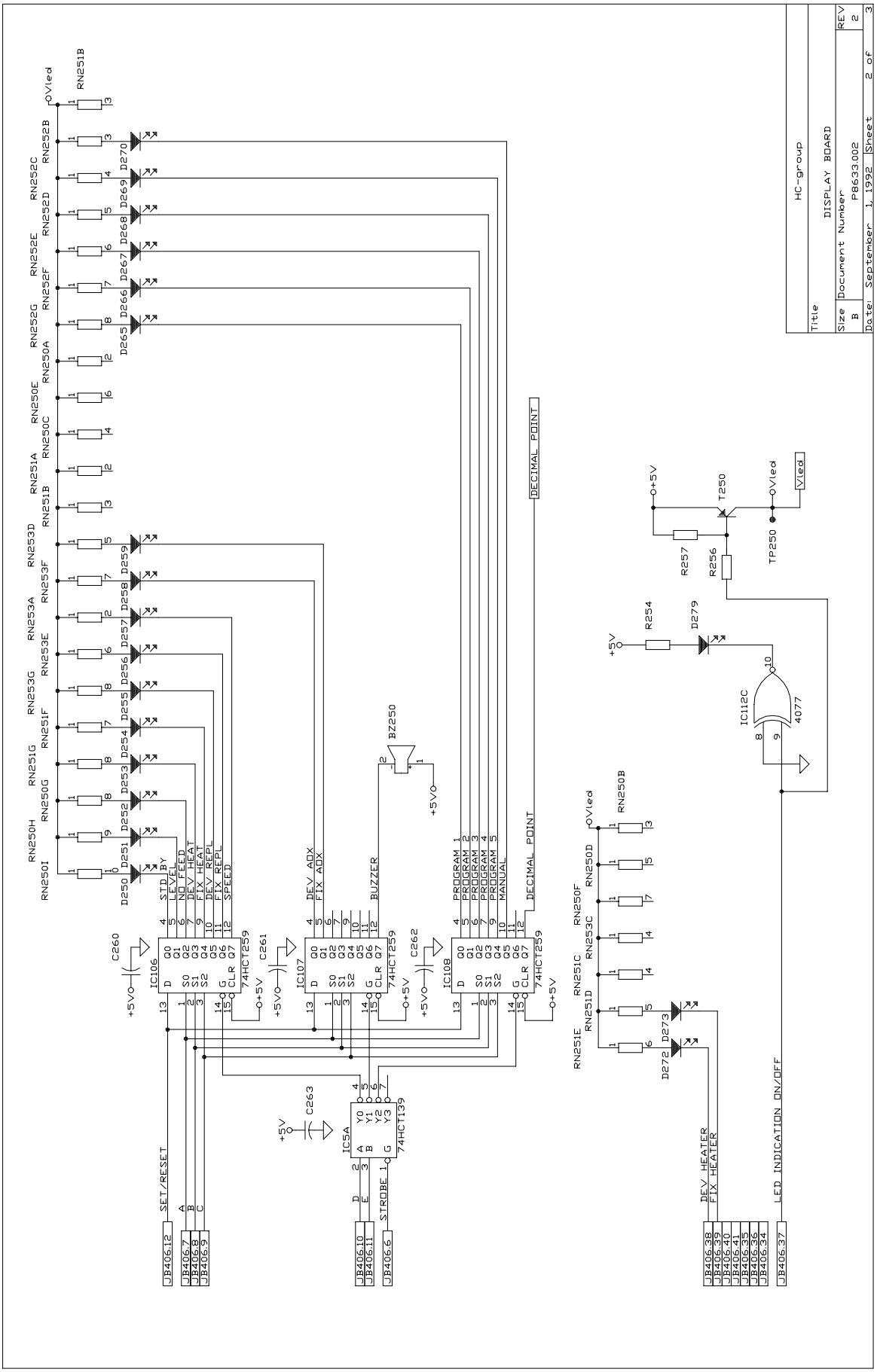
A/D - D/A Converter Part



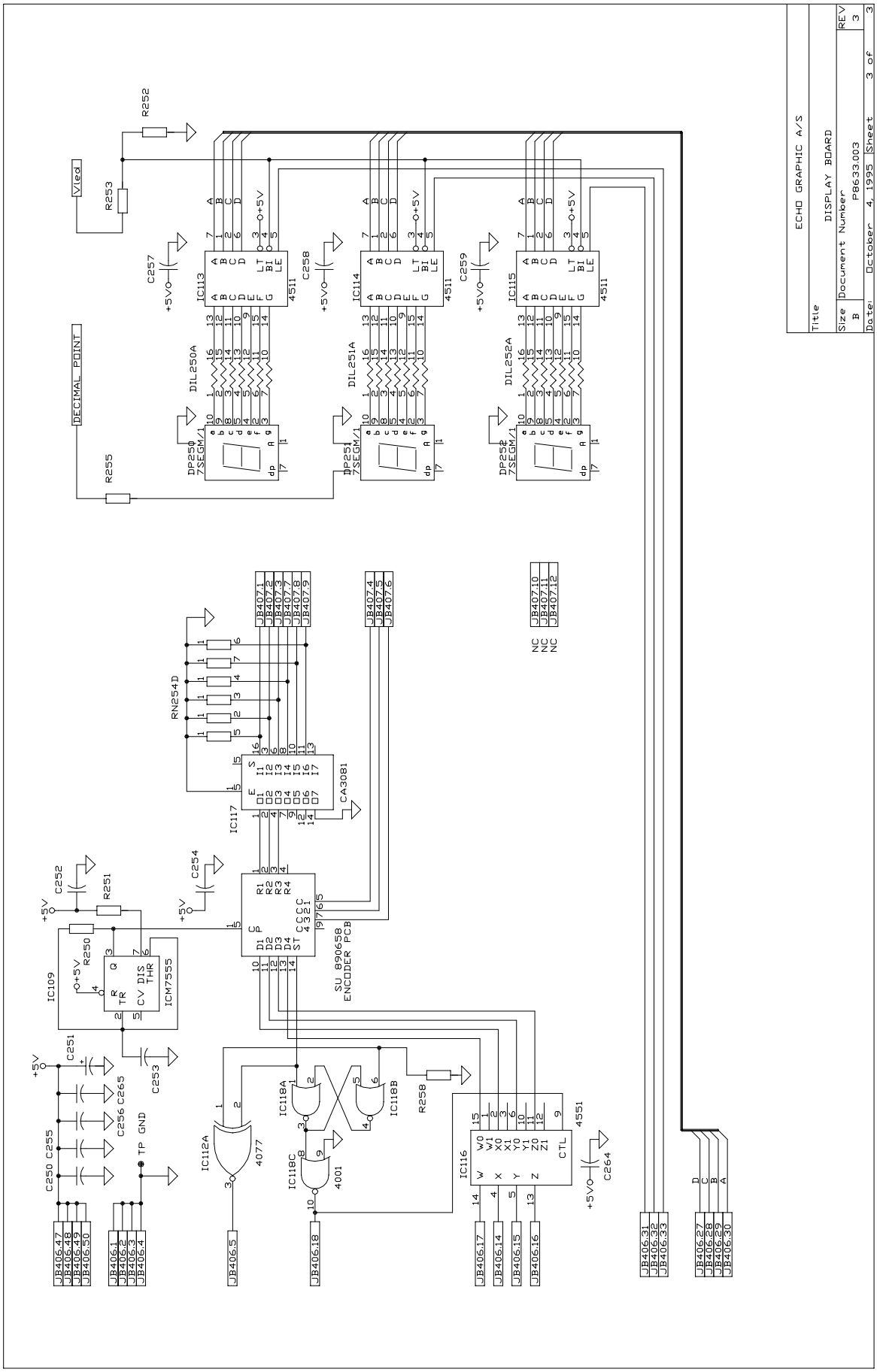
CPU Location



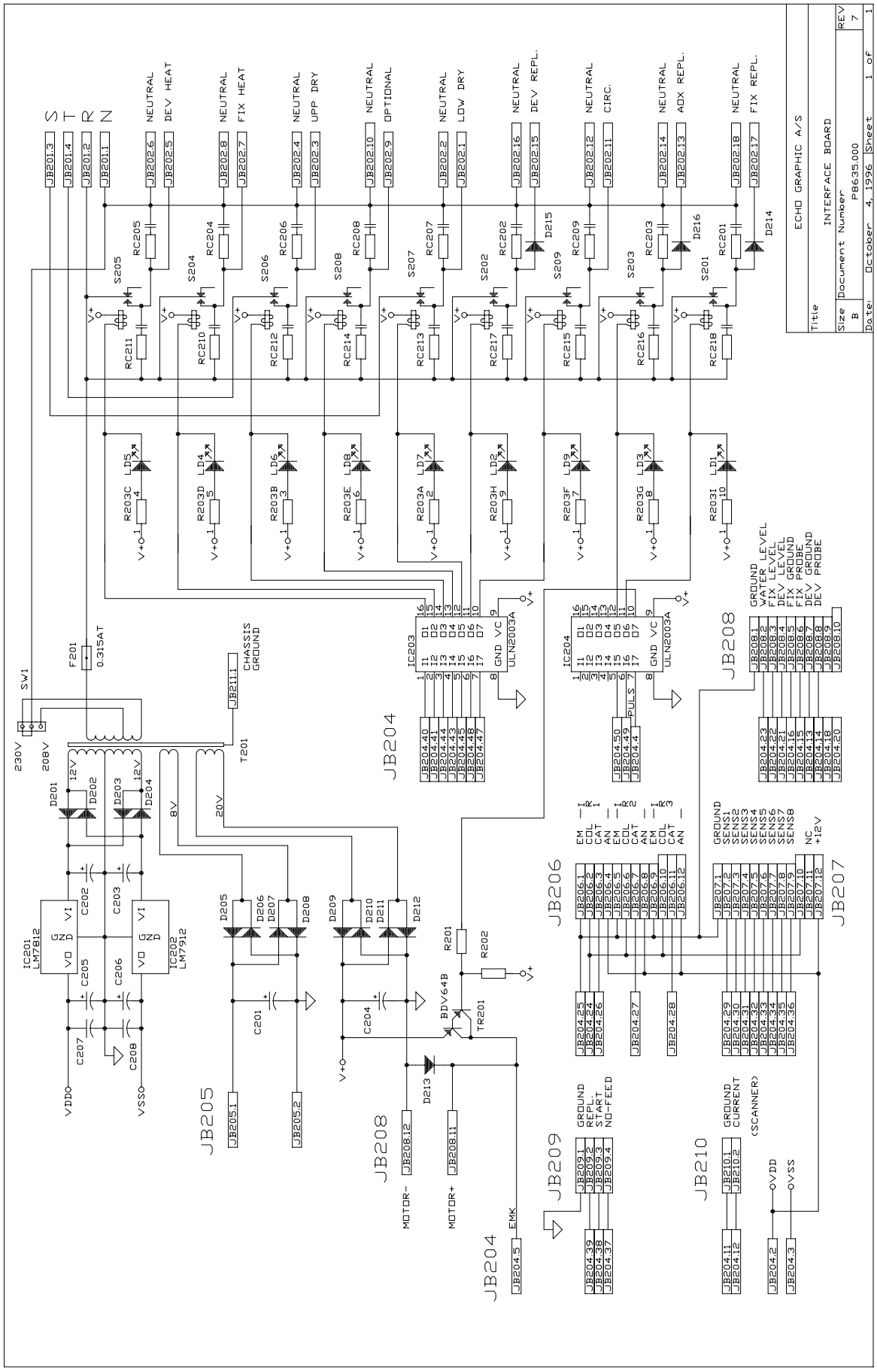
Display Location



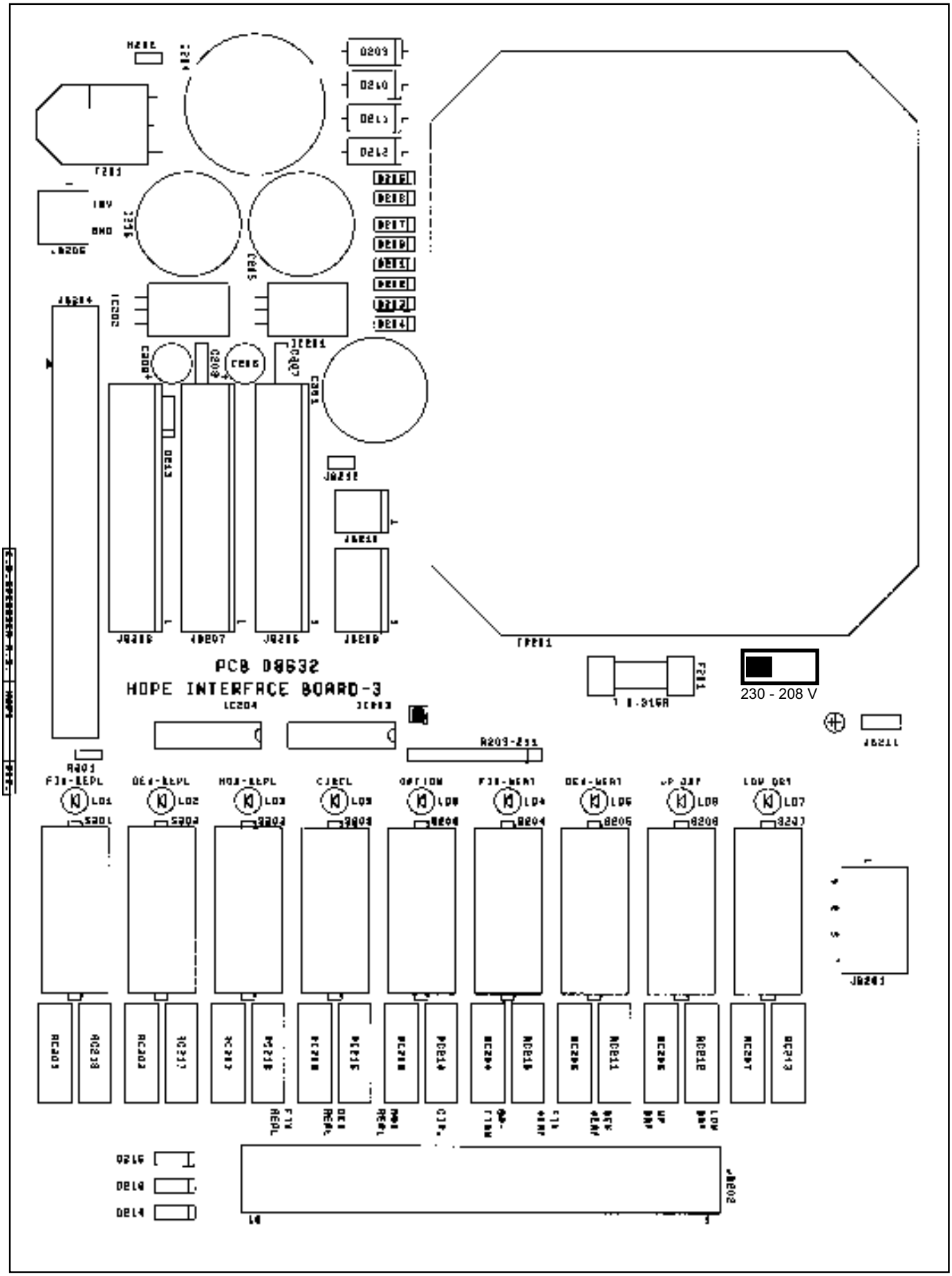
Display Keyboard



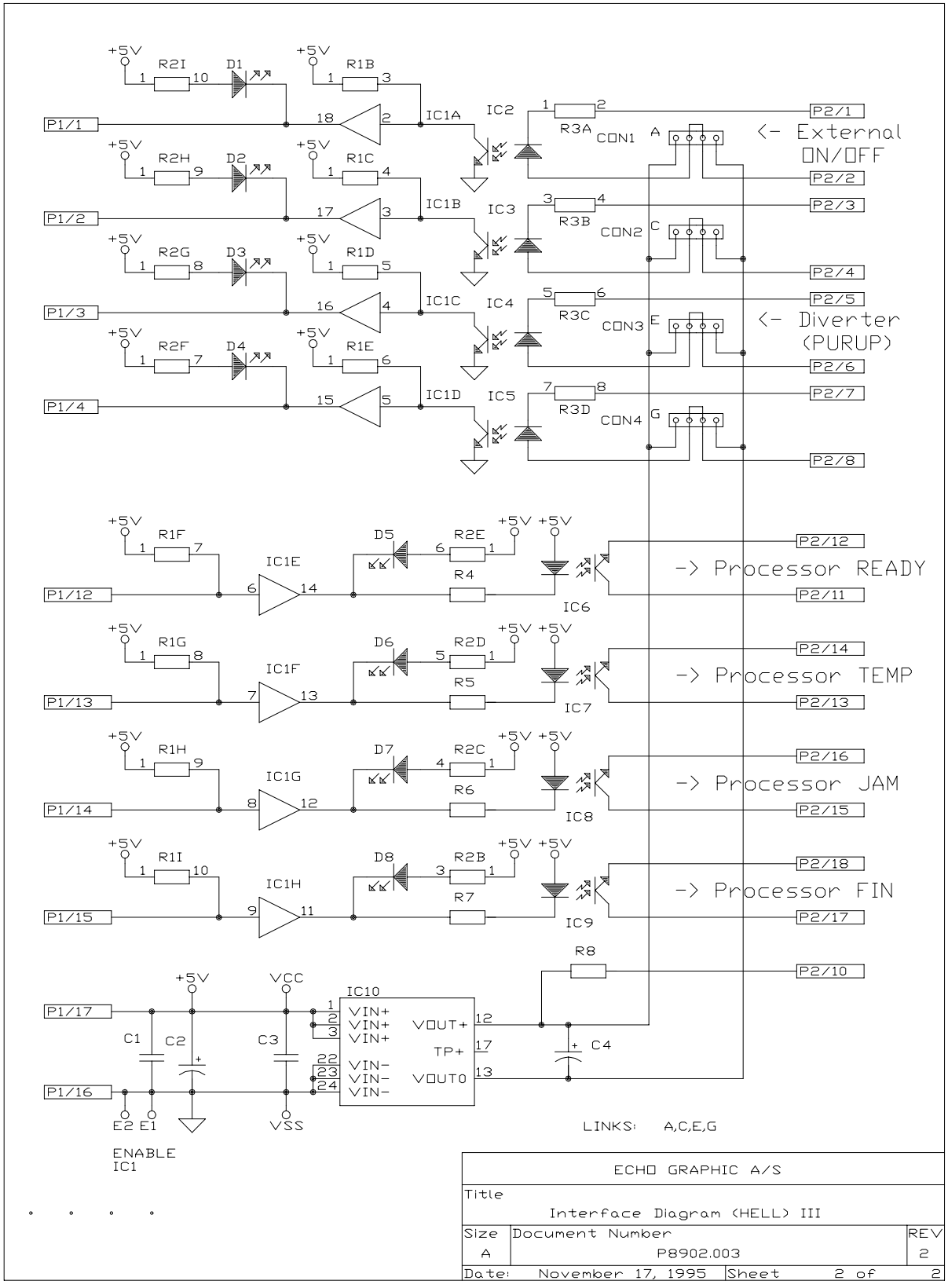
Display Keyboard


ECHO GRAPHIC A/S
INTERFACE BOARD
Document Number P8635.000
October 4, 1996
JB201.3 S
JB201.4 T
JB201.2 R
JB201.1 N
NEUTRAL DEV HEAT
NEUTRAL FIX HEAT
NEUTRAL UPP DRY
NEUTRAL OPTIONAL
NEUTRAL LOW DRY
NEUTRAL DEV REPL.
NEUTRAL CIRC.
NEUTRAL ADX REPL.
NEUTRAL FIX REPL.
SW1
F201
0.315AT
230V
208V
T201
CHASSIS GROUND
JB211.1
12V
8V
20V
IC201 LM7812
IC202 LM7912
IC203 ULN2003A
IC204 ULN2003A
JB204
JB205
JB206
JB207
JB208
JB209
JB210
MOTOR-
MOTOR+
EMK
BDV64B
TR201
D213
VDDO
VSSO
GROUND WATER LEVEL FIX LEVEL DEV LEVEL FIX GROUND FIX PROBE DEV GROUND DEV PROBE
GROUND REPL START NO-FEED
GROUND CURRENT (SCANNER)
VDD
VSS

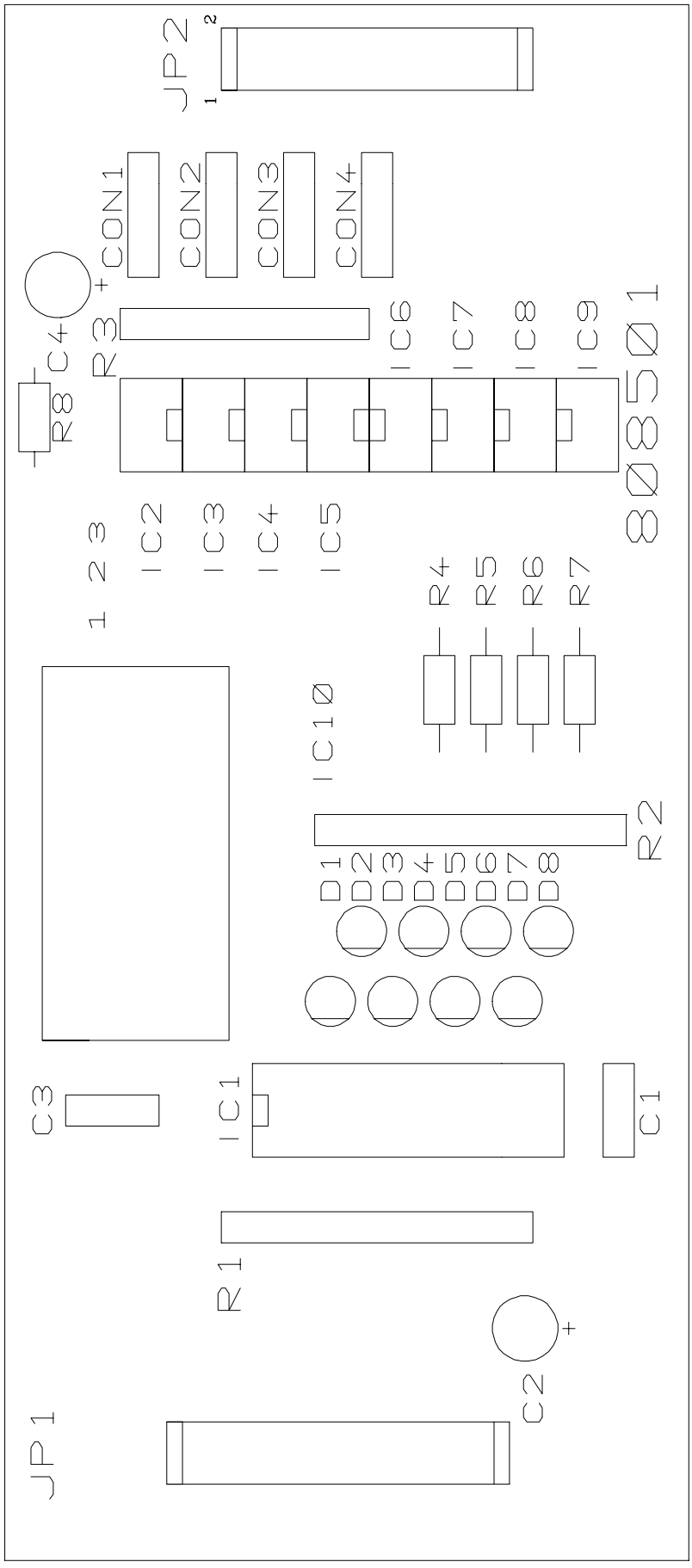
Relay Board



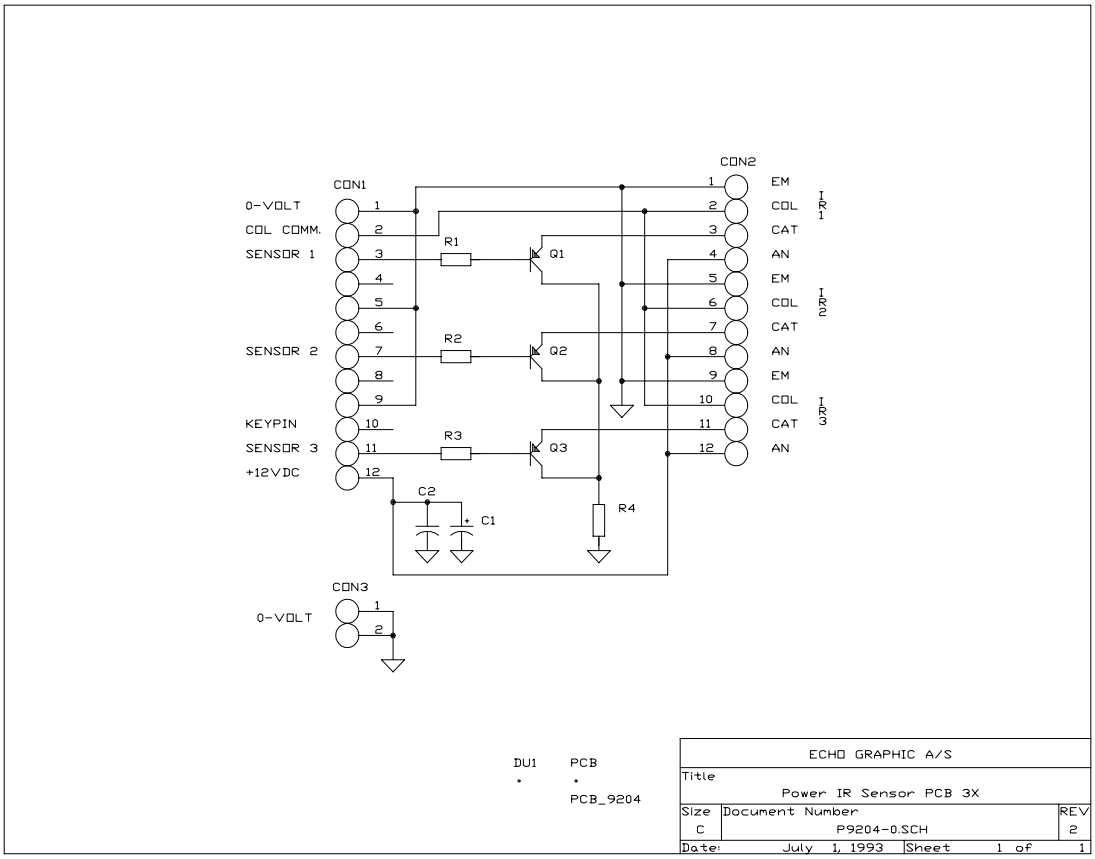
Relay Location

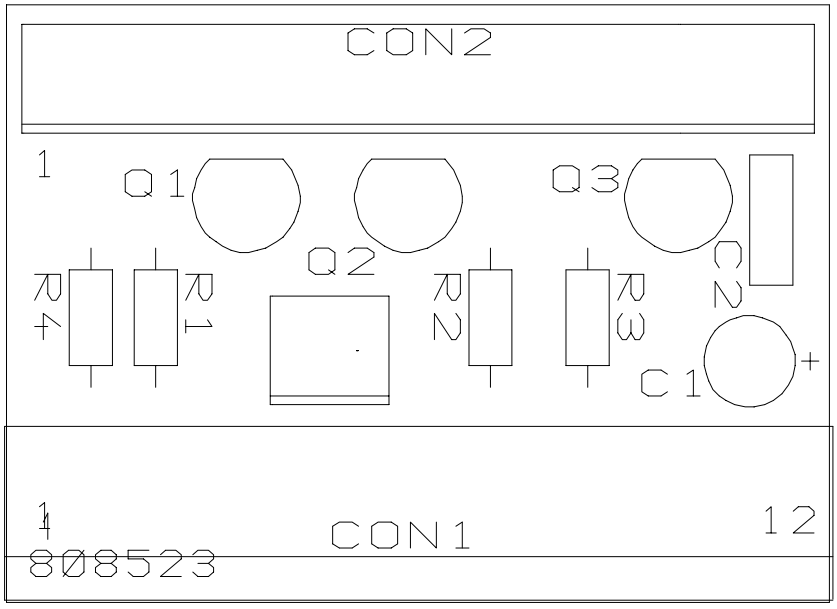


Interface Diagram

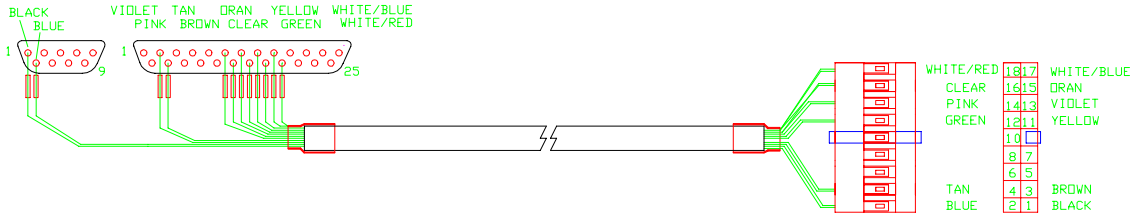


Interface Location



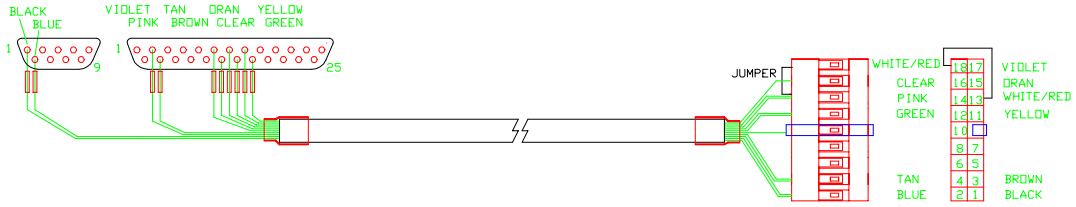


Power IR Sensor PCB, Drawing and Location



Interface Cable C-Box
Barco GigaSetter

Drawing number 365098

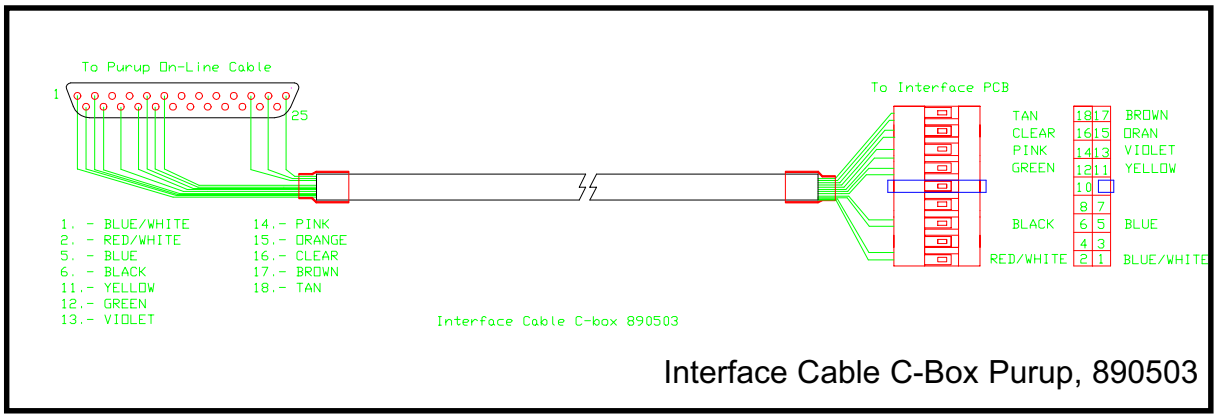


Interface Cable C-Box
Barco Megasetter+
Barco Megasetter
Barco BG3800

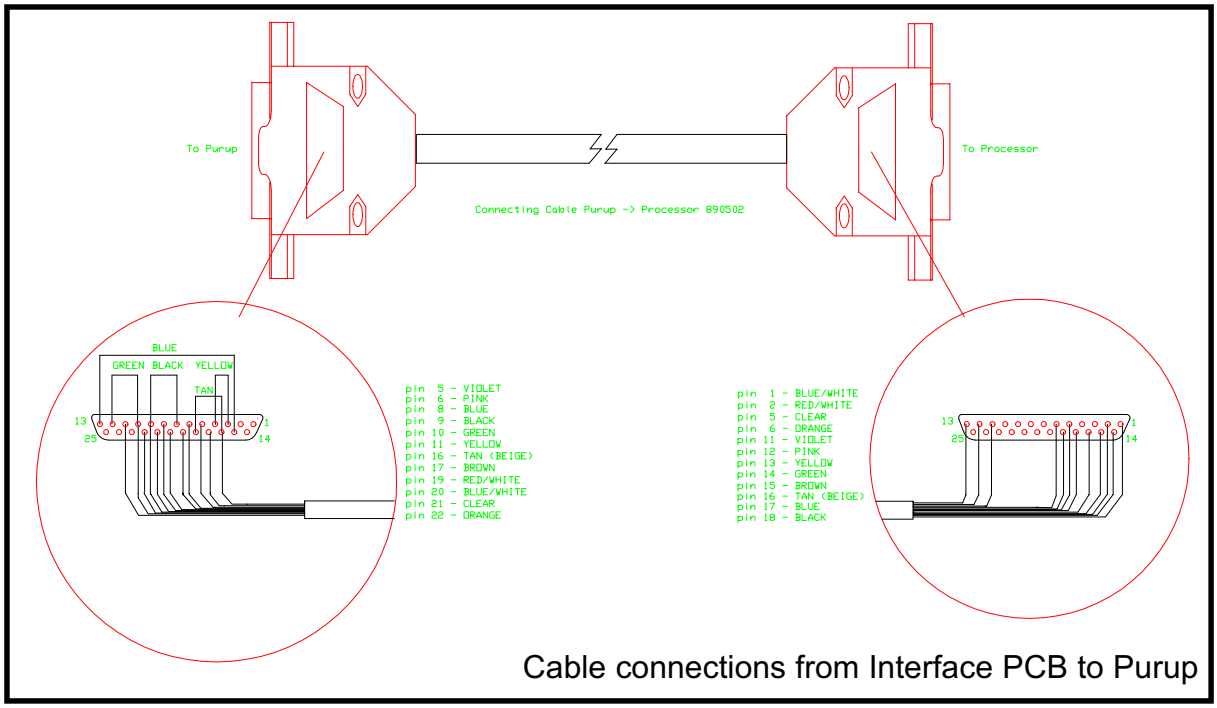
Drawing number 136098

Important

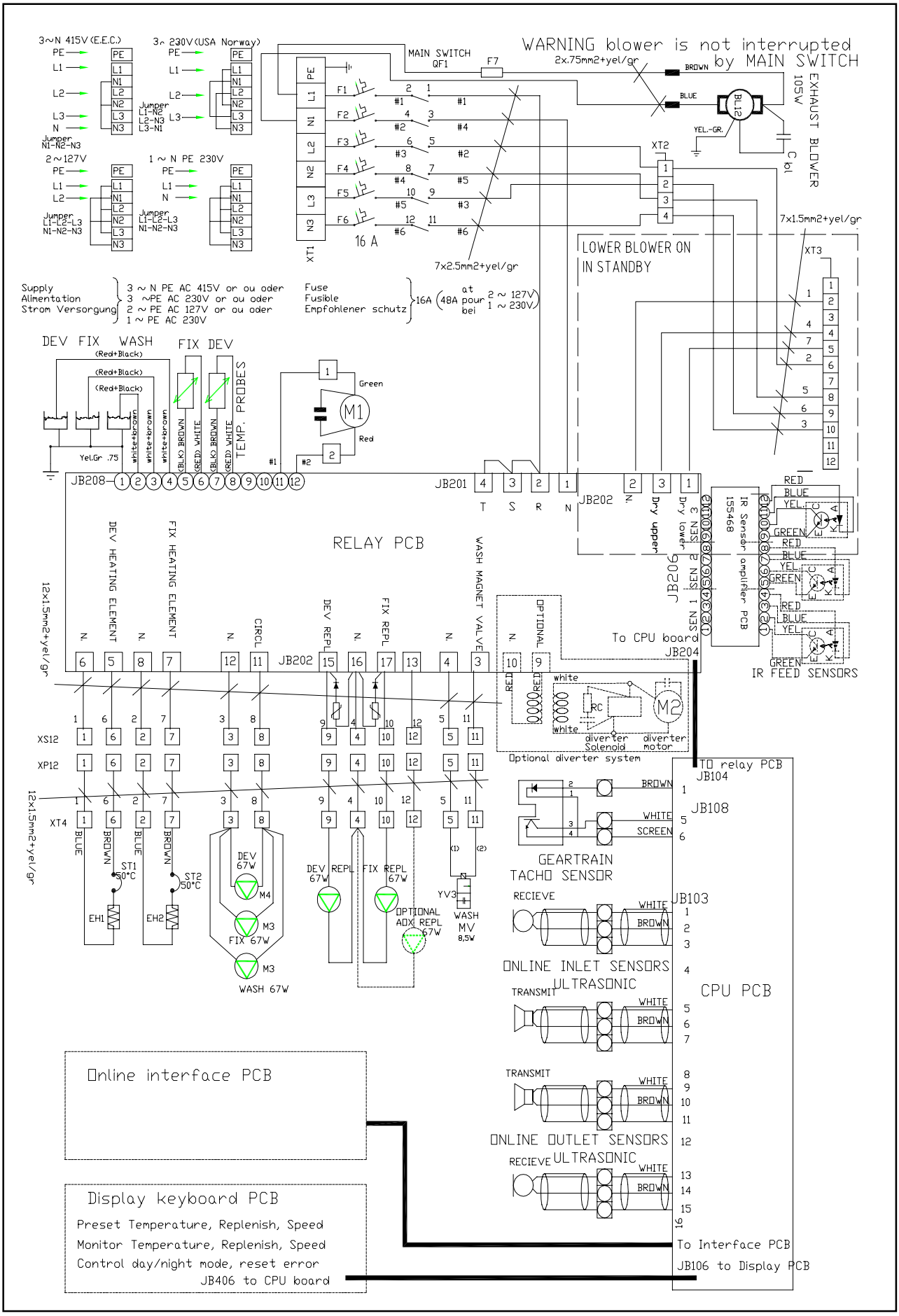
Communication cable between processor and Barco Imagesetter´s is supplied by Barco



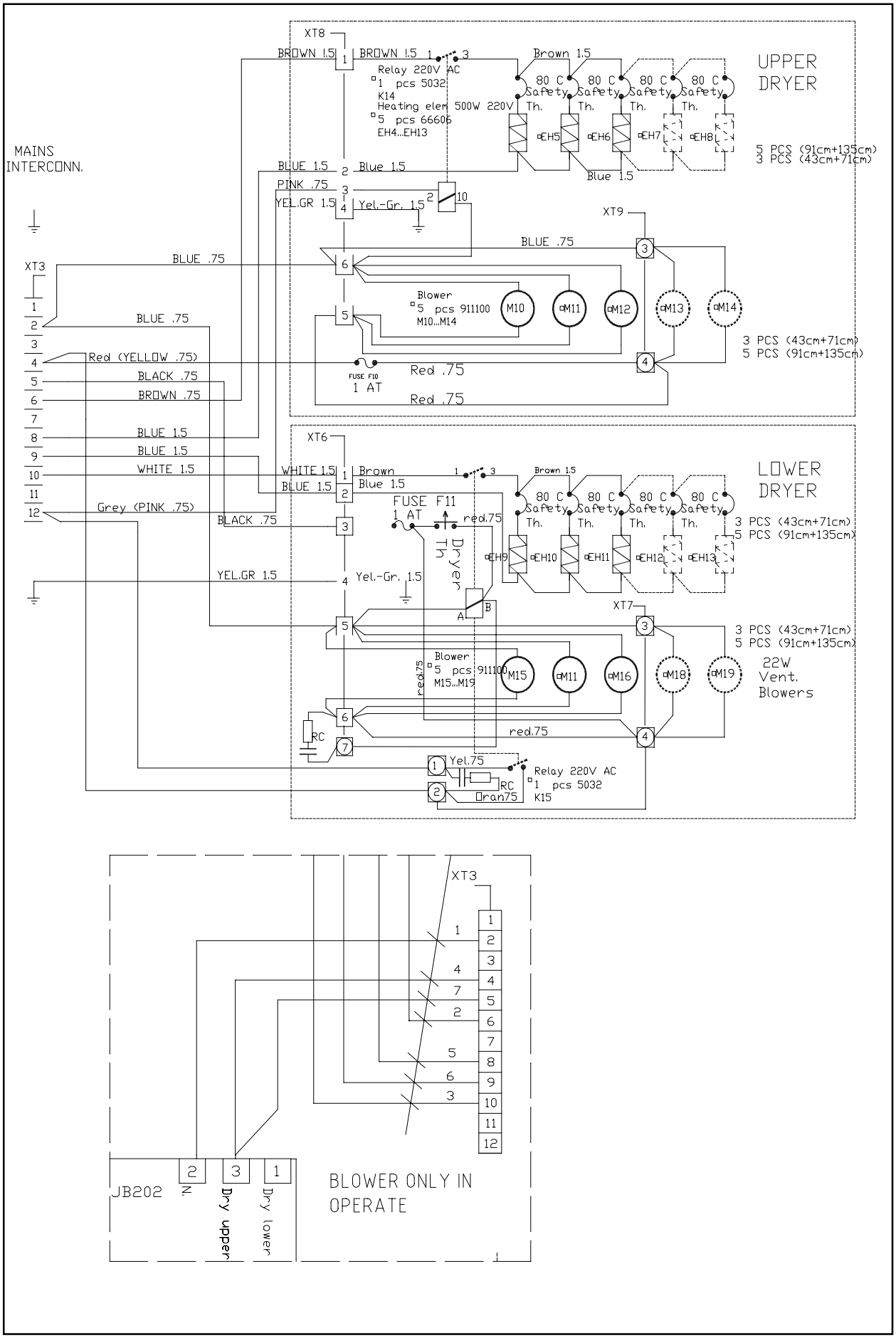
Interface Cable C-Box Purup, 890503



Cable connections from Interface PCB to Purup



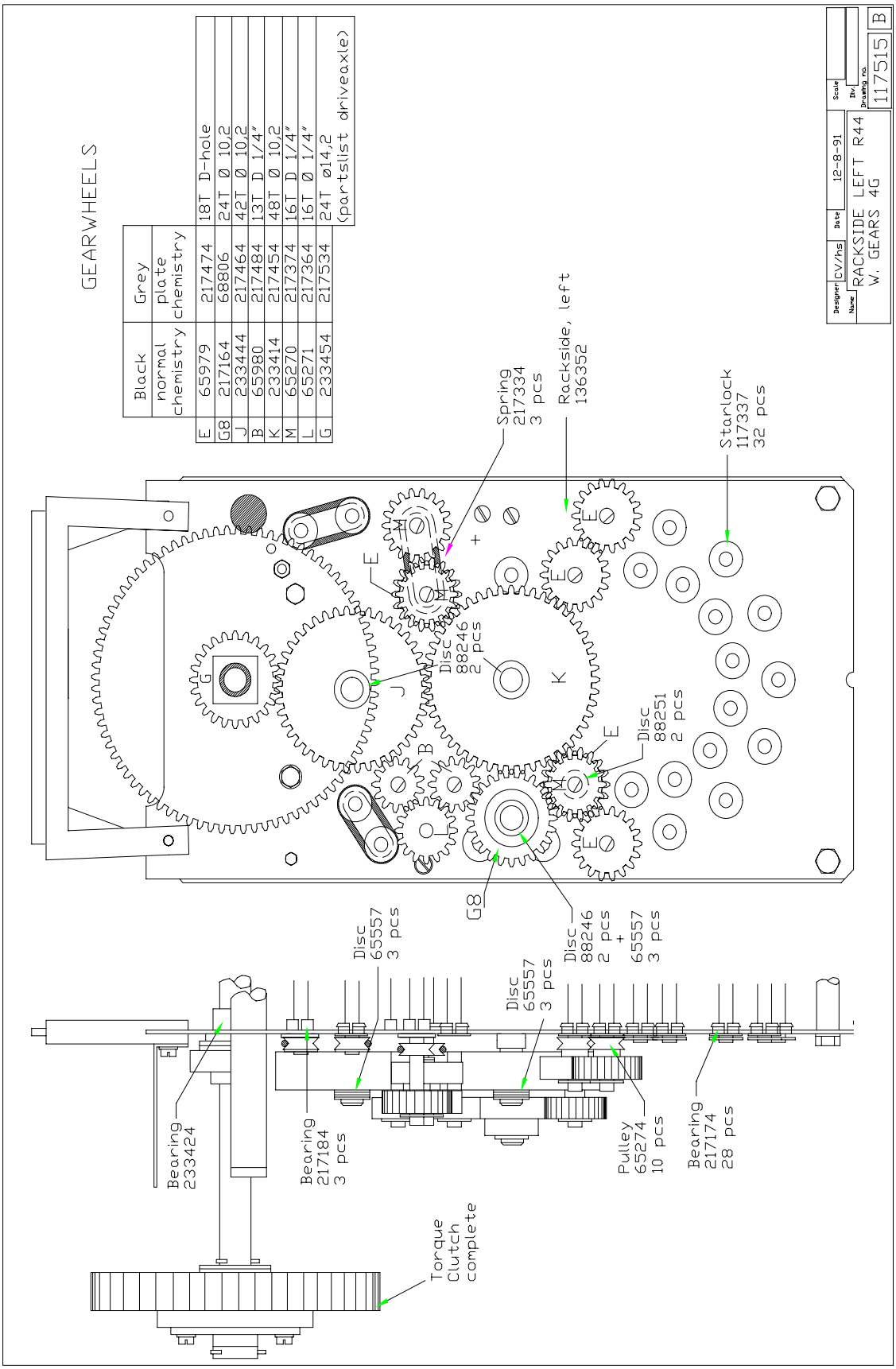
Interconnection Diagram HD 5965



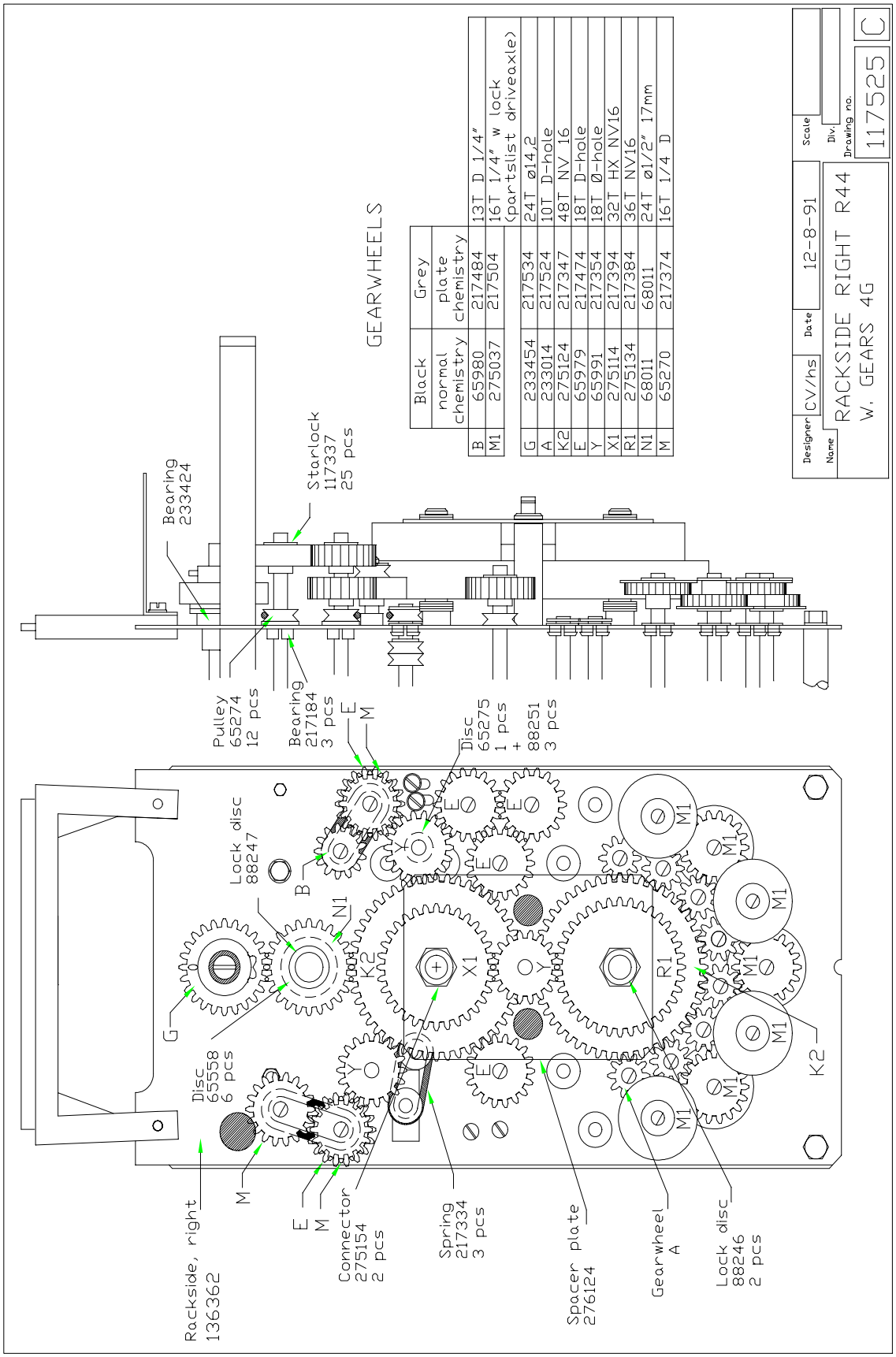
Interconnection Diagram HD 5965

TABLE OF CONTENTS

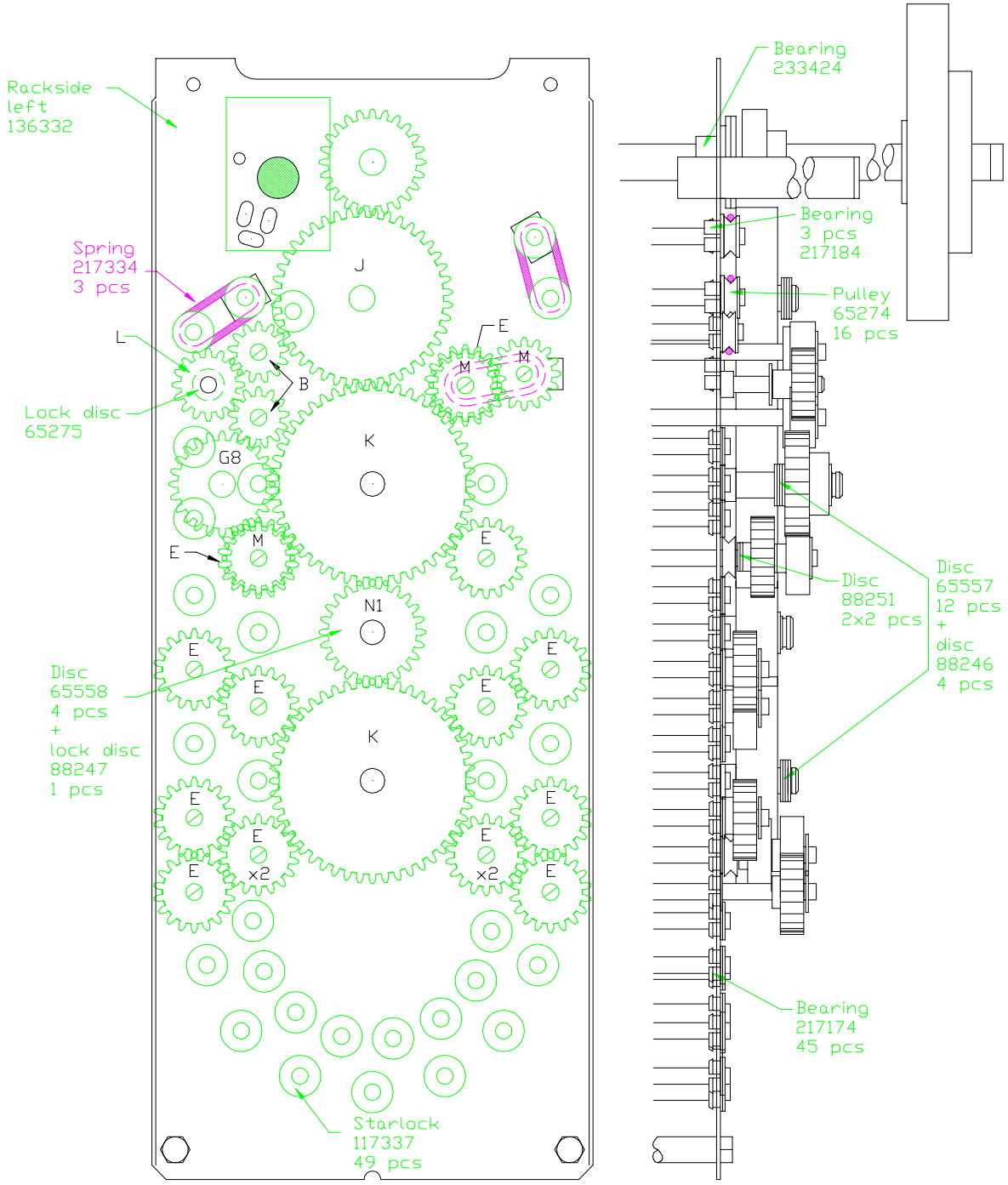
Mechanical Drawings:



R44 Gearwhell Position Left Side, Drawing 117515

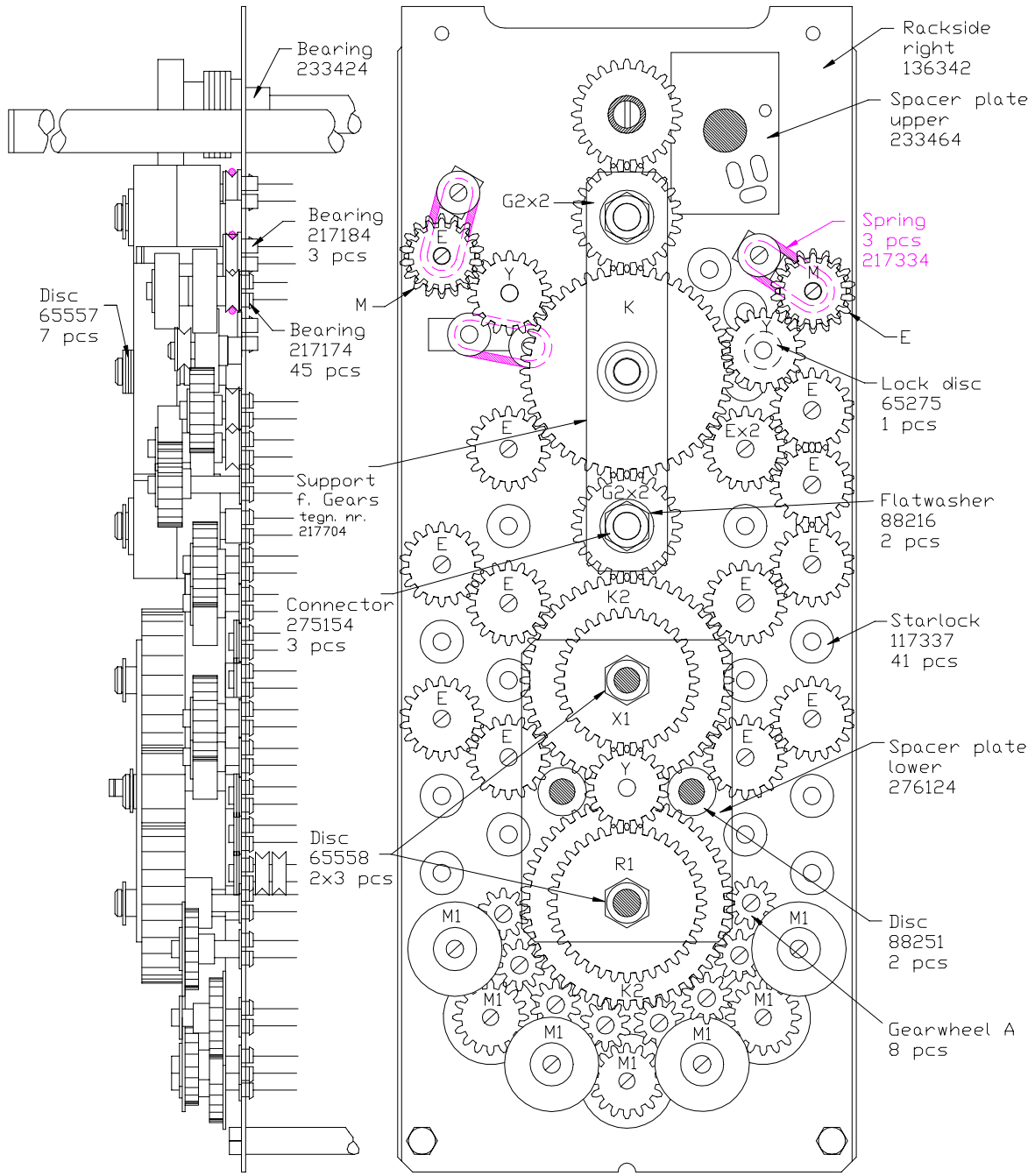


R44 Gearwhell Position Right Side, Drawing 117525



K	233414	48T ? 10,2mm
J	233444	42T ? 10,2mm
L	65271	16T ? 1/4"
M	65270	16T D 1/4"
B	65980	13T D 1/4"
E	65979	18T D
N1	68011	24T ? 1/2" 17mm
G8	217164	24T ? 10,2mm

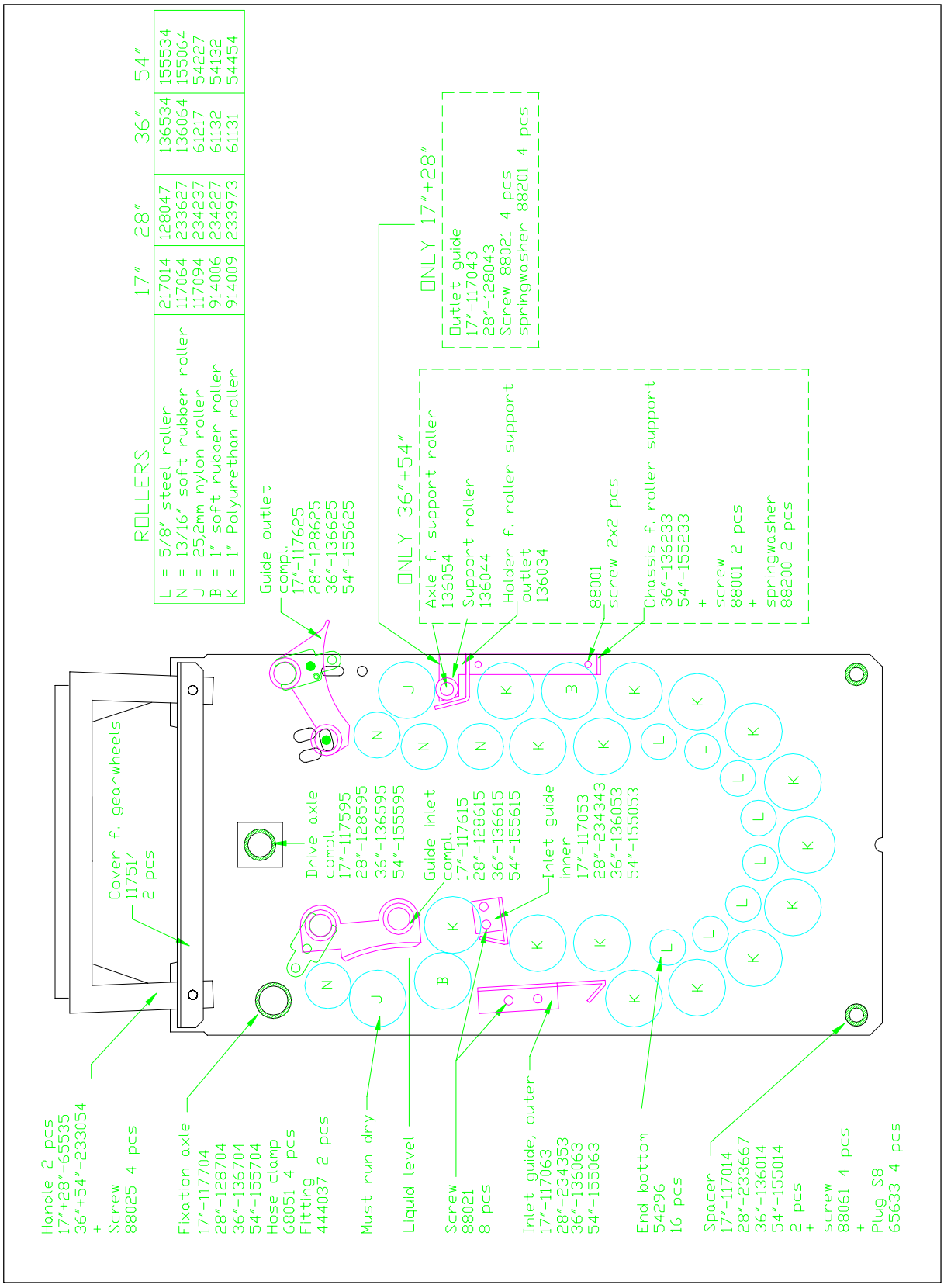
R67 Gearwheel Position Left Side, Drawing 117535



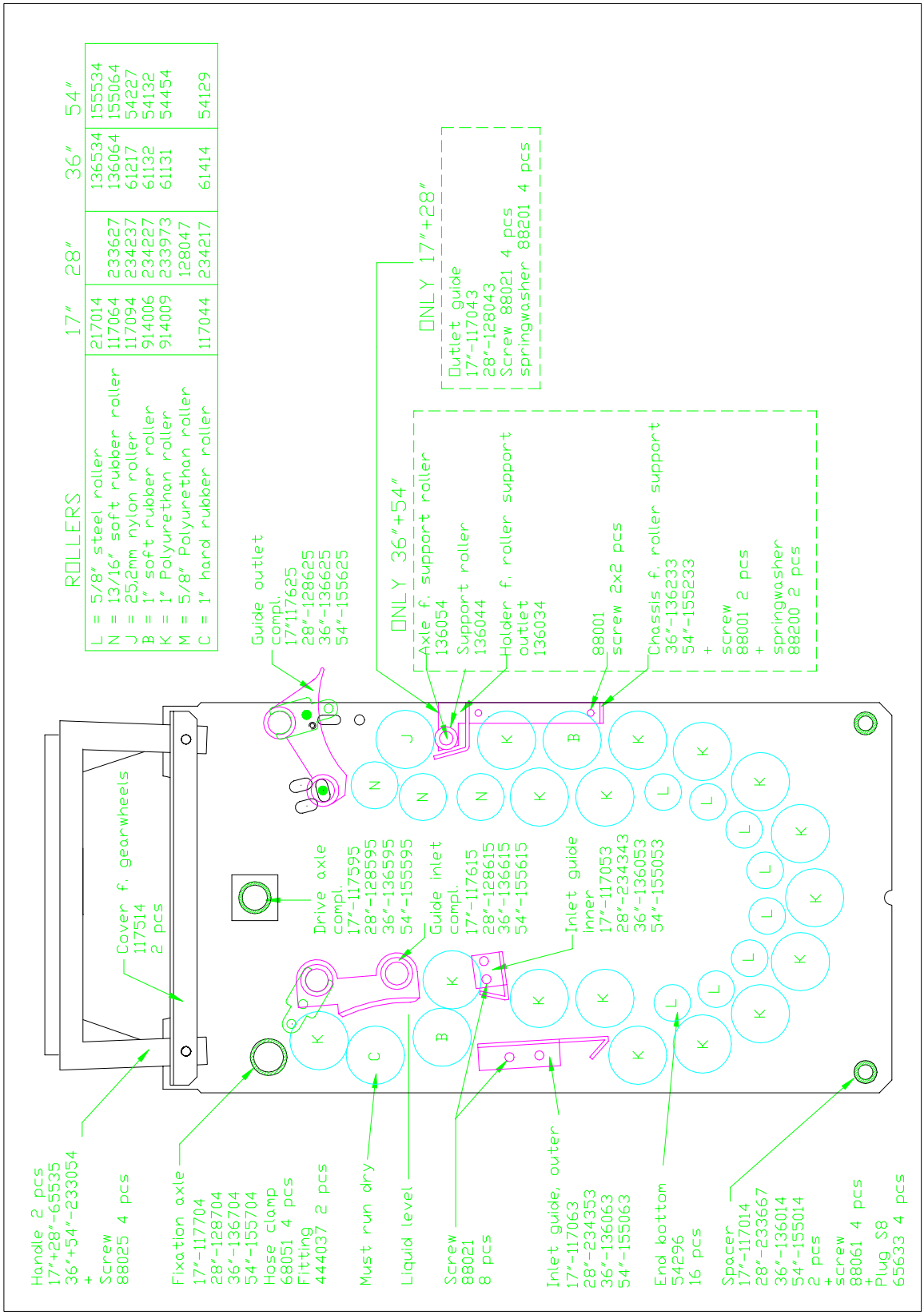
GEARWHEELS

E	65979	18T D 1/4″
M	65270	16T D 1/4″
M1	275037	16T D 1/4″ w. lock
K	233414	48T Ø 10,2mm
A	233014	10T D 1/4″
X1	275114	32T HX NV 16
K2	275124	48T HX NV 16
R1	275134	36T NV 16
Y	65991	18T Ø 1/4″
G2	234144	24T HX

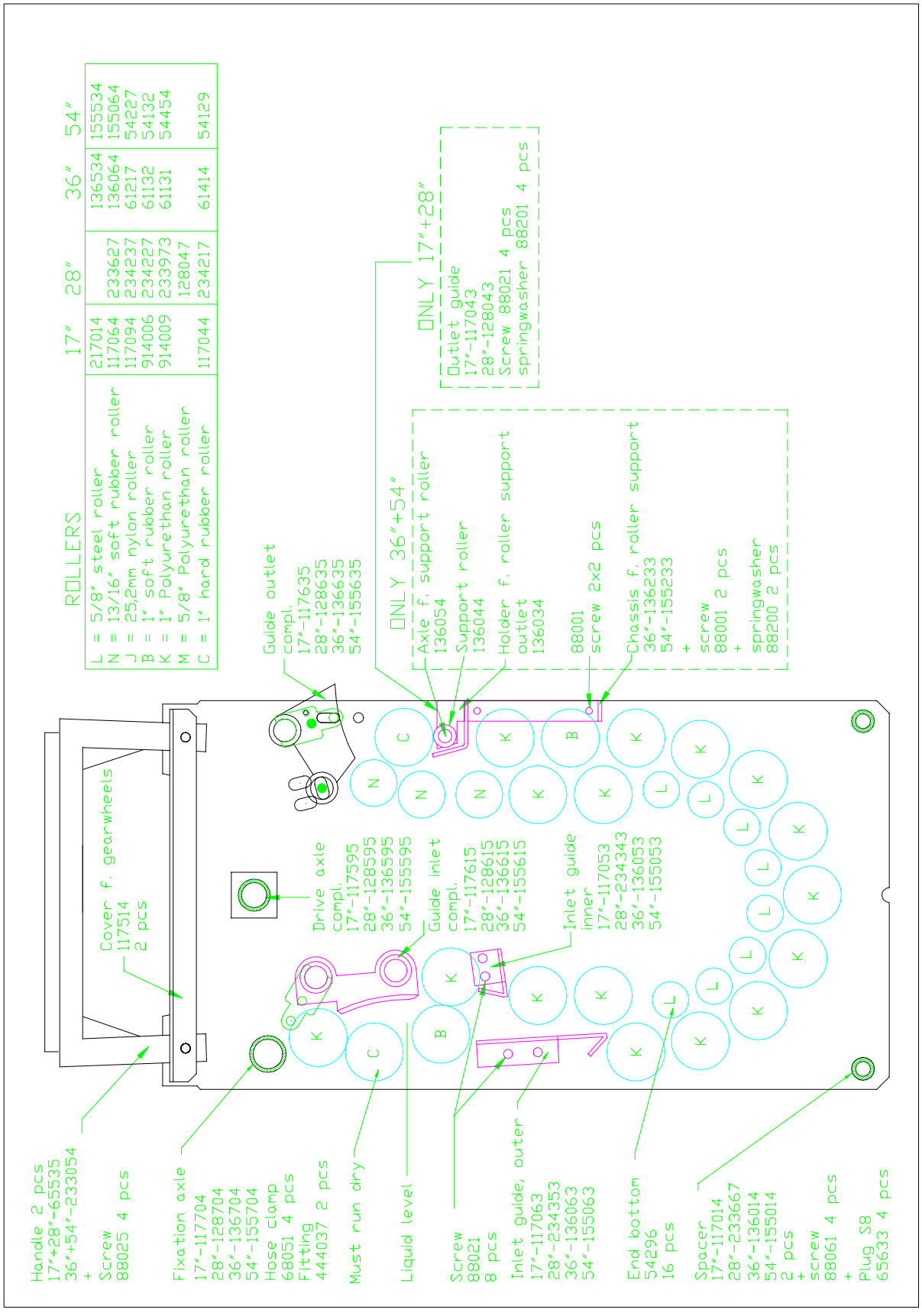
R67 Gearwheel Position Right Side, Drawing 117545



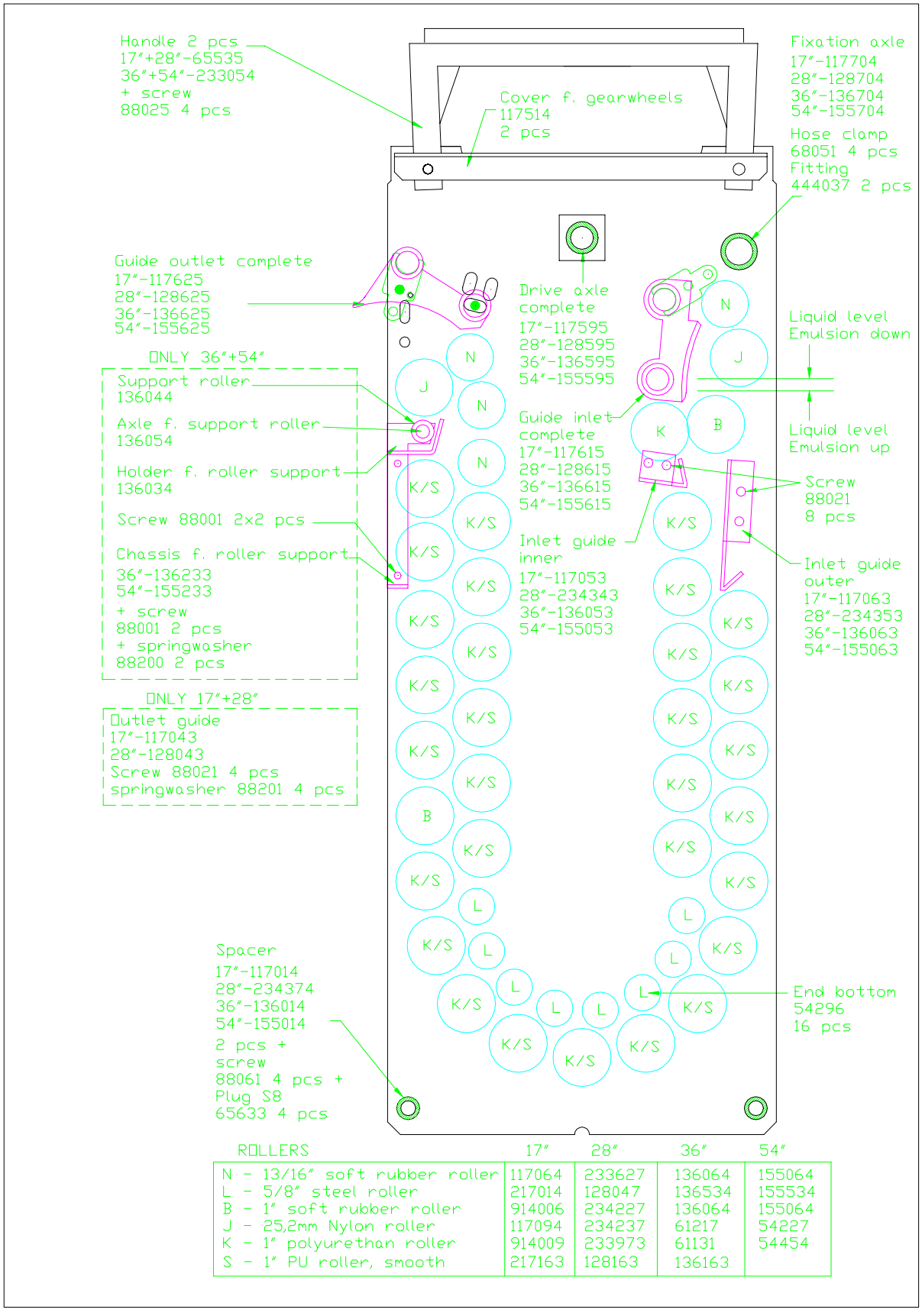
R44 Roller Position Developer, Drawing 5275



R44 Roller Position Fixer, Drawing 5805

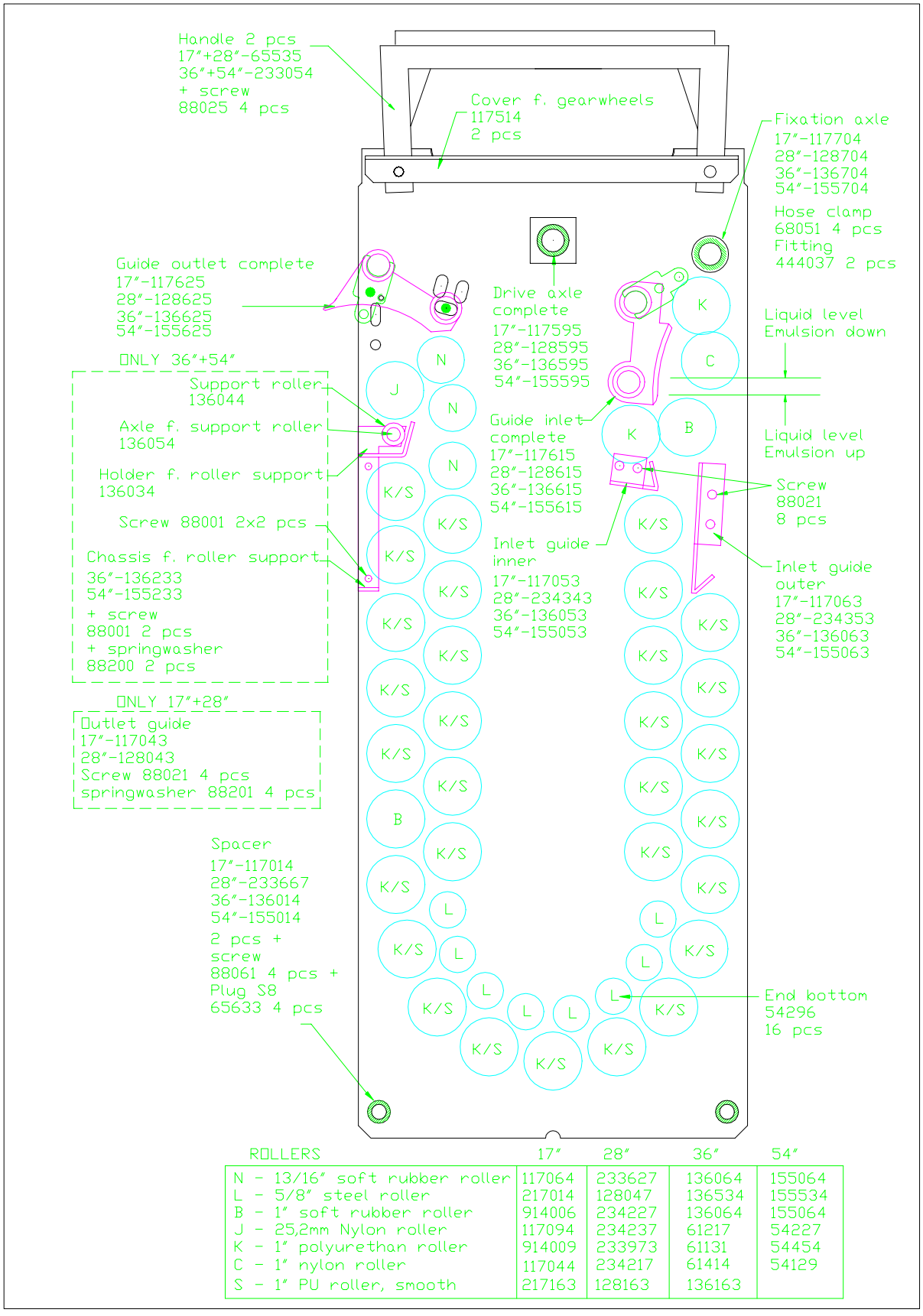


R44 Roller Position Wash, Drawing 5806



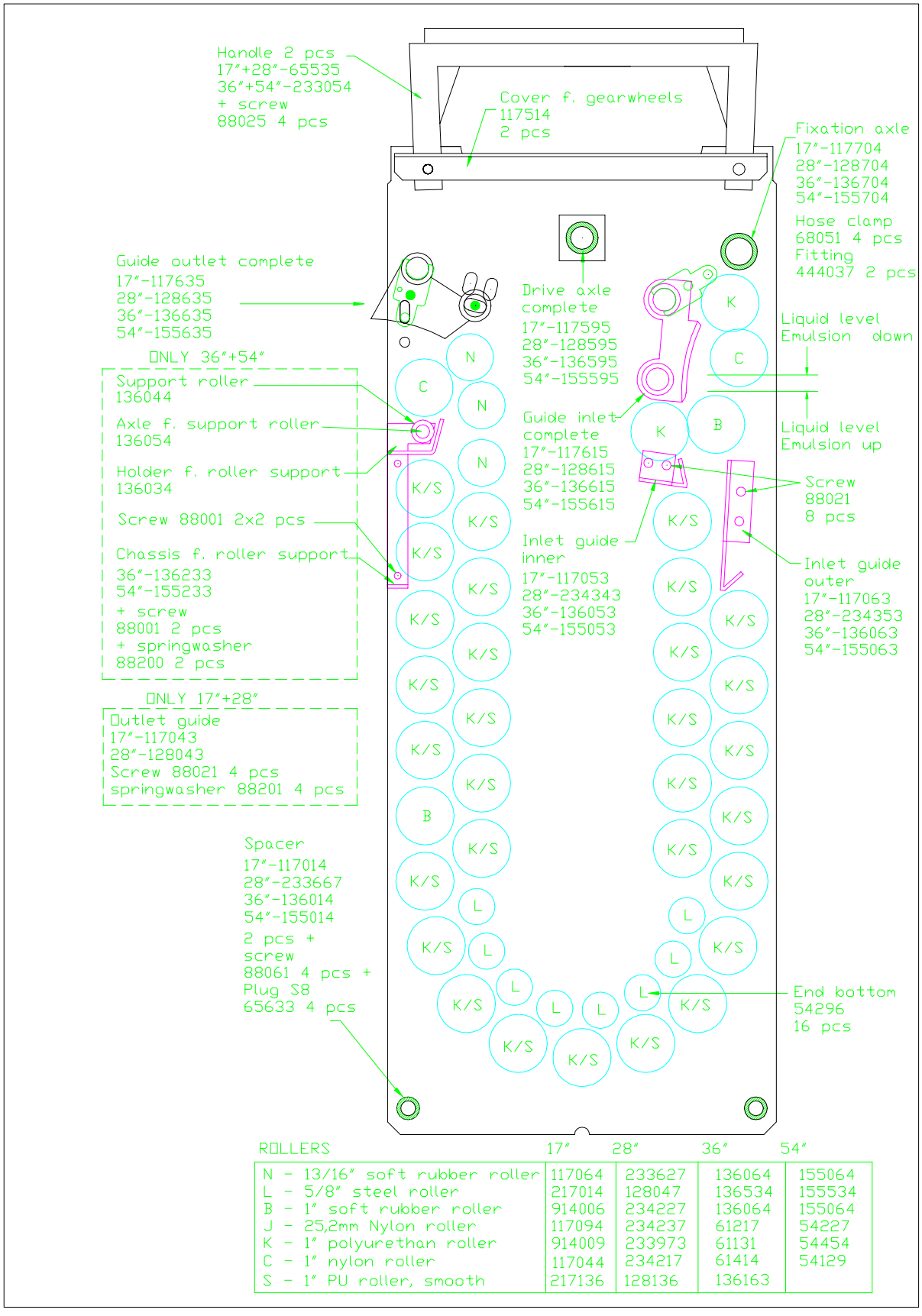
ROLLERS	17″	28″	36″	54″
N - 13/16″ soft rubber roller	117064	233627	136064	155064
L - 5/8″ steel roller	217014	128047	136534	155534
B - 1″ soft rubber roller	914006	234227	136064	155064
J - 25,2mm Nylon roller	117094	234237	61217	54227
K - 1″ polyurethan roller	914009	233973	61131	54454
S - 1″ PU roller, smooth	217163	128163	136163	

R67 Roller Position Developer, Drawing 5254



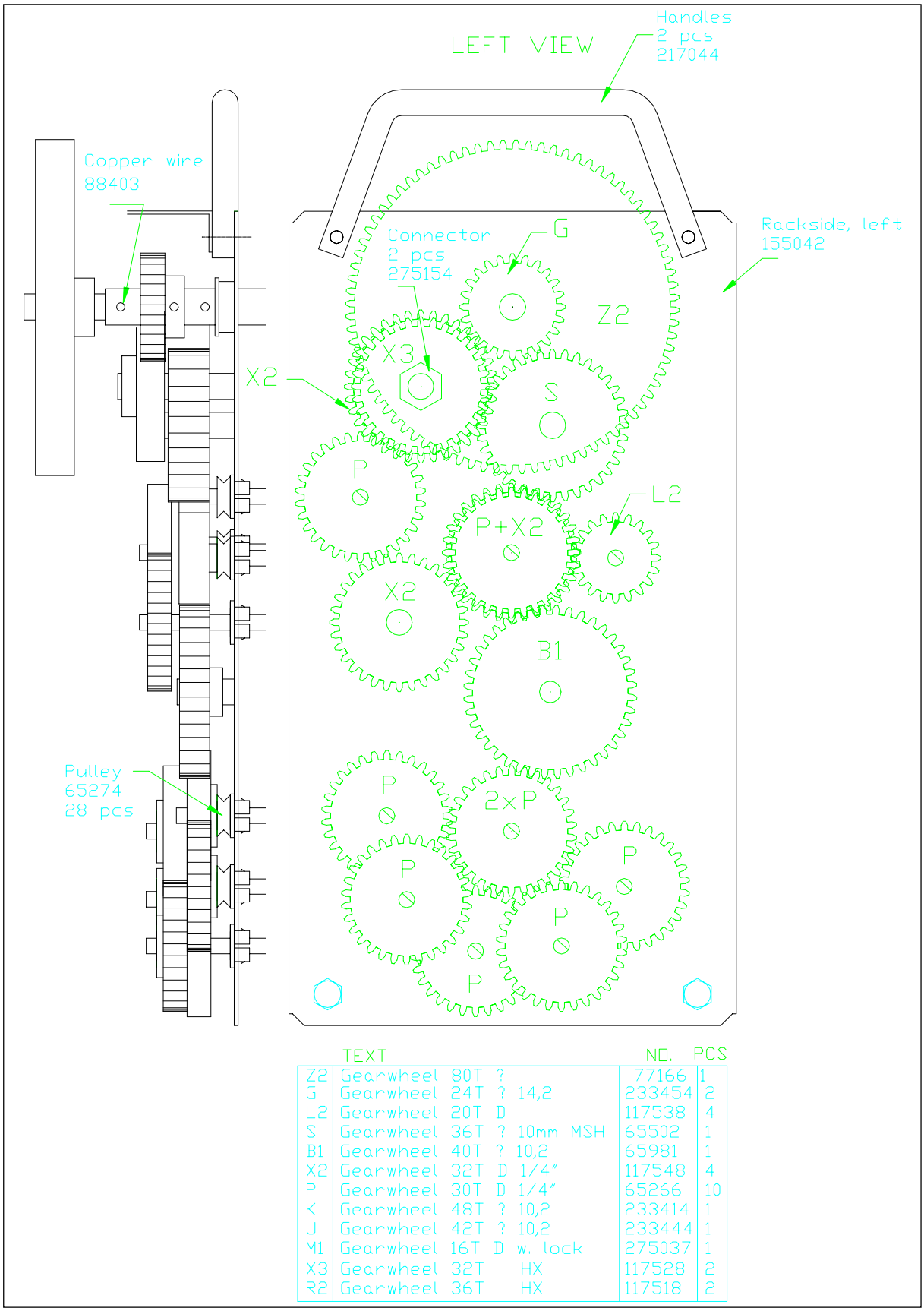
ROLLERS	17"	28"	36"	54"
N - 13/16" soft rubber roller	117064	233627	136064	155064
L - 5/8" steel roller	217014	128047	136534	155534
B - 1" soft rubber roller	914006	234227	136064	155064
J - 25,2mm Nylon roller	117094	234237	61217	54227
K - 1" polyurethan roller	914009	233973	61131	54454
C - 1" nylon roller	117044	234217	61414	54129
S - 1" PU roller, smooth	217163	128163	136163	

R67 Roller Position Fixer, Drawing 5801



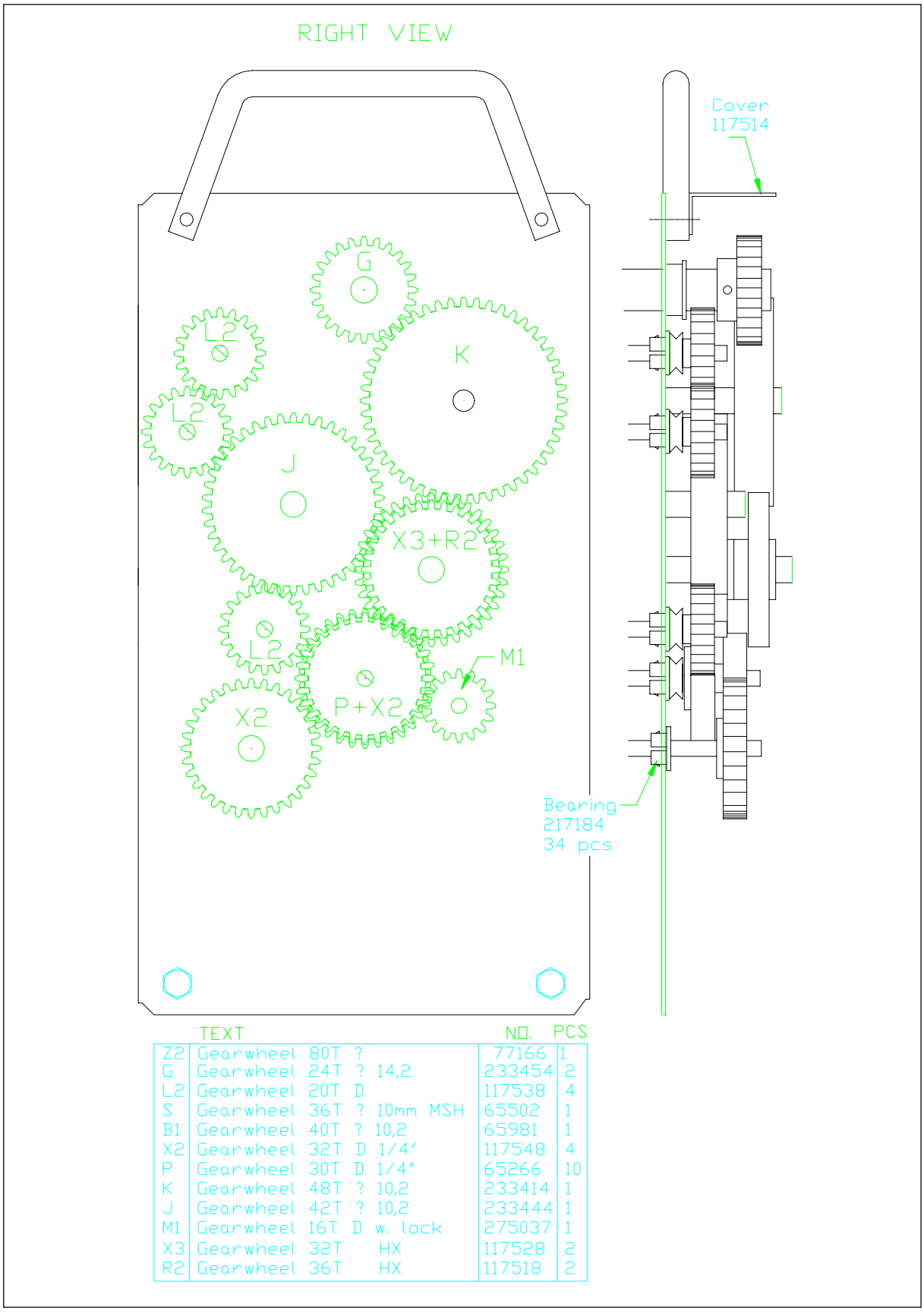
ROLLERS	17″	28″	36″	54″
N - 13/16″ soft rubber roller	117064	233627	136064	155064
L - 5/8″ steel roller	217014	128047	136534	155534
B - 1″ soft rubber roller	914006	234227	136064	155064
J - 25,2mm Nylon roller	117094	234237	61217	54227
K - 1″ polyurethan roller	914009	233973	61131	54454
C - 1″ nylon roller	117044	234217	61414	54129
S - 1″ PU roller, smooth	217136	128136	136163	

R67 Roller Position Wash, Drawing 5802



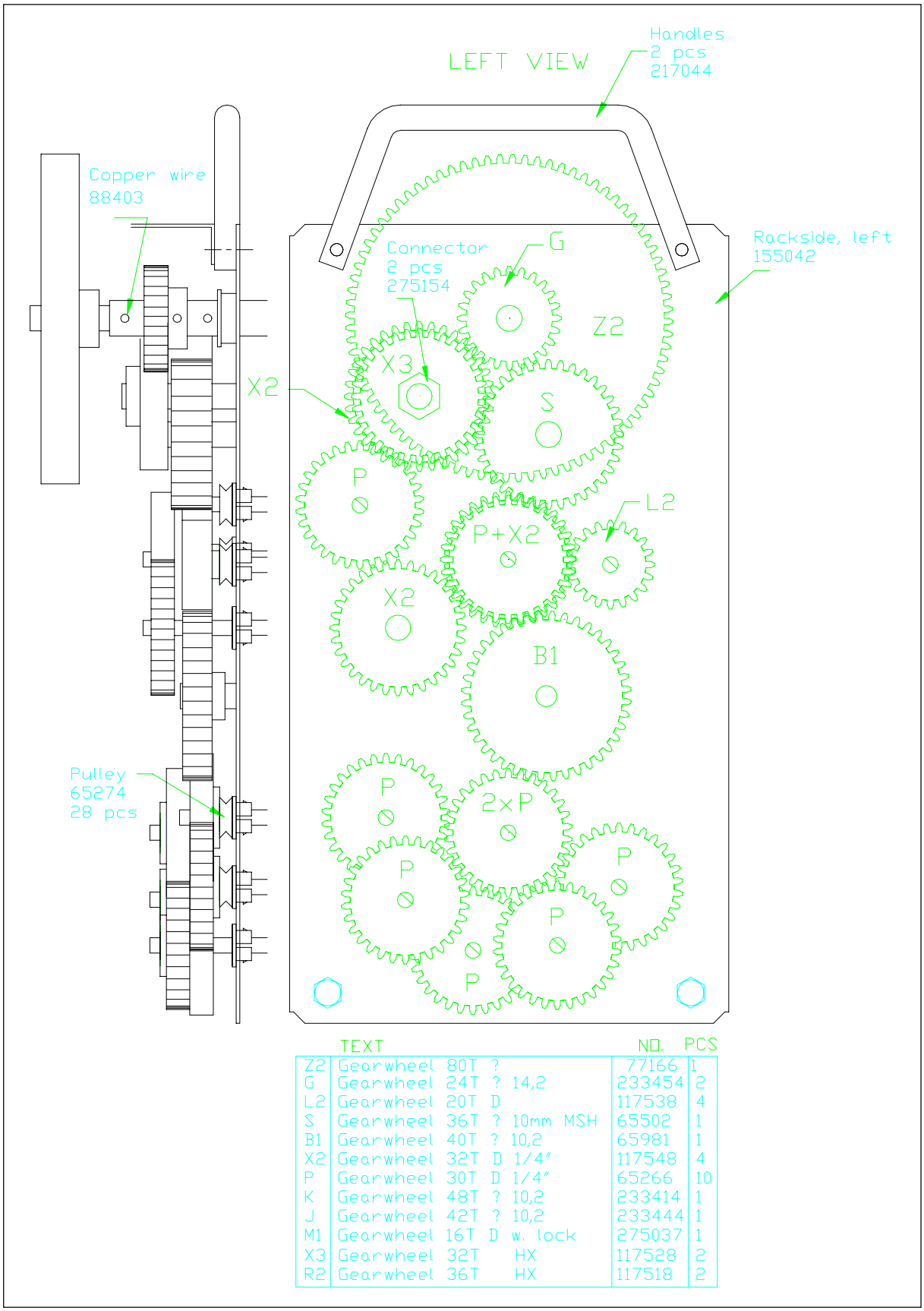
	TEXT	NO.	PCS
Z2	Gearwheel 80T ?	77166	1
G	Gearwheel 24T ? 14,2	233454	2
L2	Gearwheel 20T D	117538	4
S	Gearwheel 36T ? 10mm MSH	65502	1
B1	Gearwheel 40T ? 10,2	65981	1
X2	Gearwheel 32T D 1/4"	117548	4
P	Gearwheel 30T D 1/4"	65266	10
K	Gearwheel 48T ? 10,2	233414	1
J	Gearwheel 42T ? 10,2	233444	1
M1	Gearwheel 16T D w. lock	275037	1
X3	Gearwheel 32T HX	117528	2
R2	Gearwheel 36T HX	117518	2

Gearwheel Position Left Developer Unitrac 1, Drawing 5112A



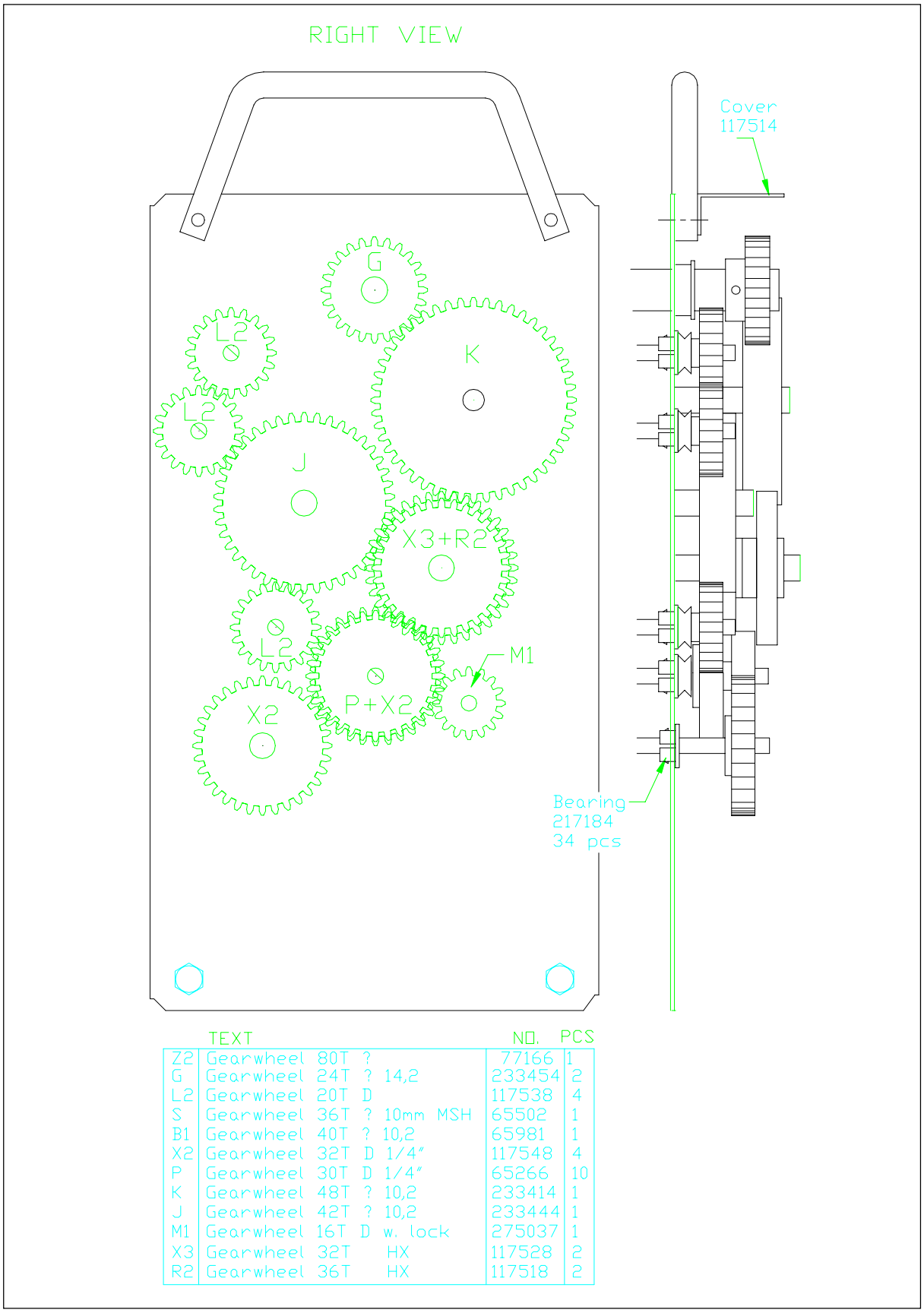
	TEXT	NO.	PCS
Z2	Gearwheel 80T ?	77166	1
G	Gearwheel 24T ? 14,2	233454	2
L2	Gearwheel 20T D	117538	4
S	Gearwheel 36T ? 10mm MSH	65502	1
B1	Gearwheel 40T ? 10,2	65981	1
X2	Gearwheel 32T D 1/4"	117548	4
P	Gearwheel 30T D 1/4"	65266	10
K	Gearwheel 48T ? 10,2	233414	1
J	Gearwheel 42T ? 10,2	233444	1
M1	Gearwheel 16T D w. lock	275037	1
X3	Gearwheel 32T HX	117528	2
R2	Gearwheel 36T HX	117518	2

Gearwheel Position Right Developer Unitrac 1, Drawing 5112B



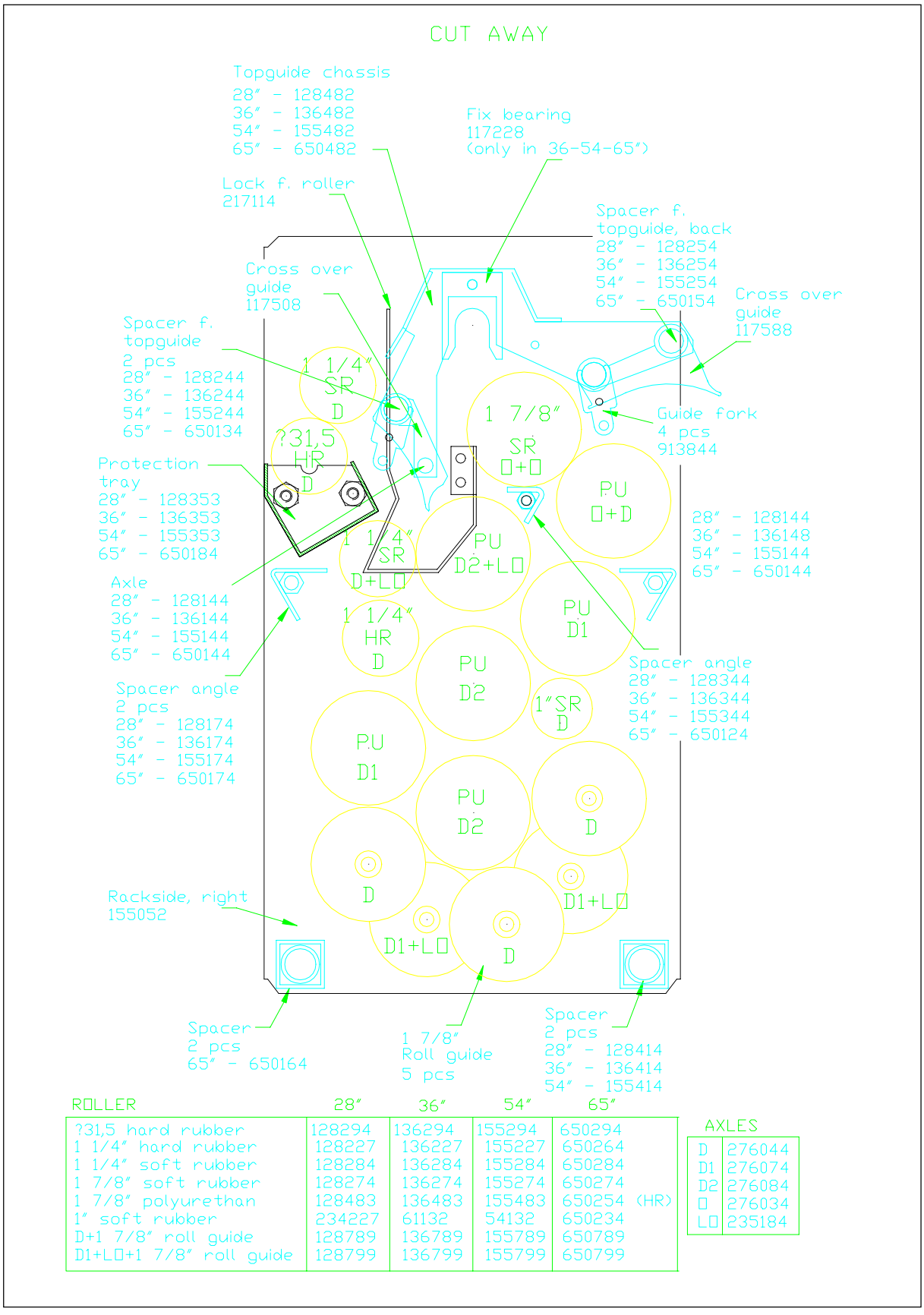
	TEXT	NO.	PCS
Z2	Gearwheel 80T ?	77166	1
G	Gearwheel 24T ? 14,2	233454	2
L2	Gearwheel 20T D	117538	4
S	Gearwheel 36T ? 10mm MSH	65502	1
B1	Gearwheel 40T ? 10,2	65981	1
X2	Gearwheel 32T D 1/4"	117548	4
P	Gearwheel 30T D 1/4"	65266	10
K	Gearwheel 48T ? 10,2	233414	1
J	Gearwheel 42T ? 10,2	233444	1
M1	Gearwheel 16T D w. lock	275037	1
X3	Gearwheel 32T HX	117528	2
R2	Gearwheel 36T HX	117518	2

Gearwheel Position Left Fix+Water Unitrac 1, Drawing 5937A



	TEXT	NO.	PCS
Z2	Gearwheel 80T ?	77166	1
G	Gearwheel 24T ? 14,2	233454	2
L2	Gearwheel 20T D	117538	4
S	Gearwheel 36T ? 10mm MSH	65502	1
B1	Gearwheel 40T ? 10,2	65981	1
X2	Gearwheel 32T D 1/4"	117548	4
P	Gearwheel 30T D 1/4"	65266	10
K	Gearwheel 48T ? 10,2	233414	1
J	Gearwheel 42T ? 10,2	233444	1
M1	Gearwheel 16T D w. lock	275037	1
X3	Gearwheel 32T HX	117528	2
R2	Gearwheel 36T HX	117518	2

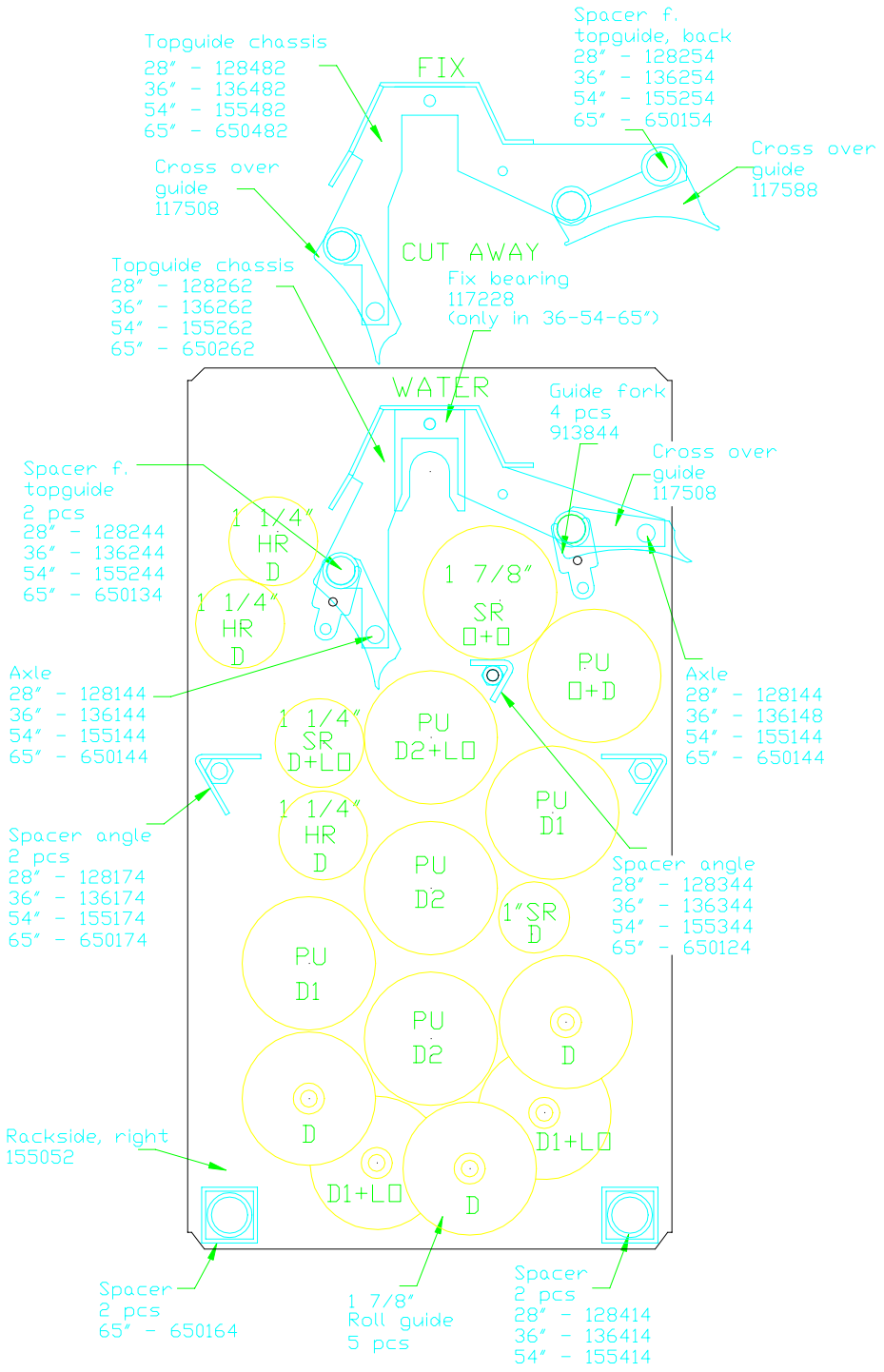
Gearwheel Position Left Fix+Water Unitrac 1, Drawing 5937B



ROLLER	28″	36″	54″	65″	
?31,5 hard rubber	128294	136294	155294	650294	
1 1/4″ hard rubber	128227	136227	155227	650264	
1 1/4″ soft rubber	128284	136284	155284	650284	
1 7/8″ soft rubber	128274	136274	155274	650274	
1 7/8″ polyurethan	128483	136483	155483	650254	(HR)
1″ soft rubber	234227	61132	54132	650234	
D+1 7/8″ roll guide	128789	136789	155789	650789	
D1+L□+1 7/8″ roll guide	128799	136799	155799	650799	

AXLES	
D	276044
D1	276074
D2	276084
□	276034
L□	235184

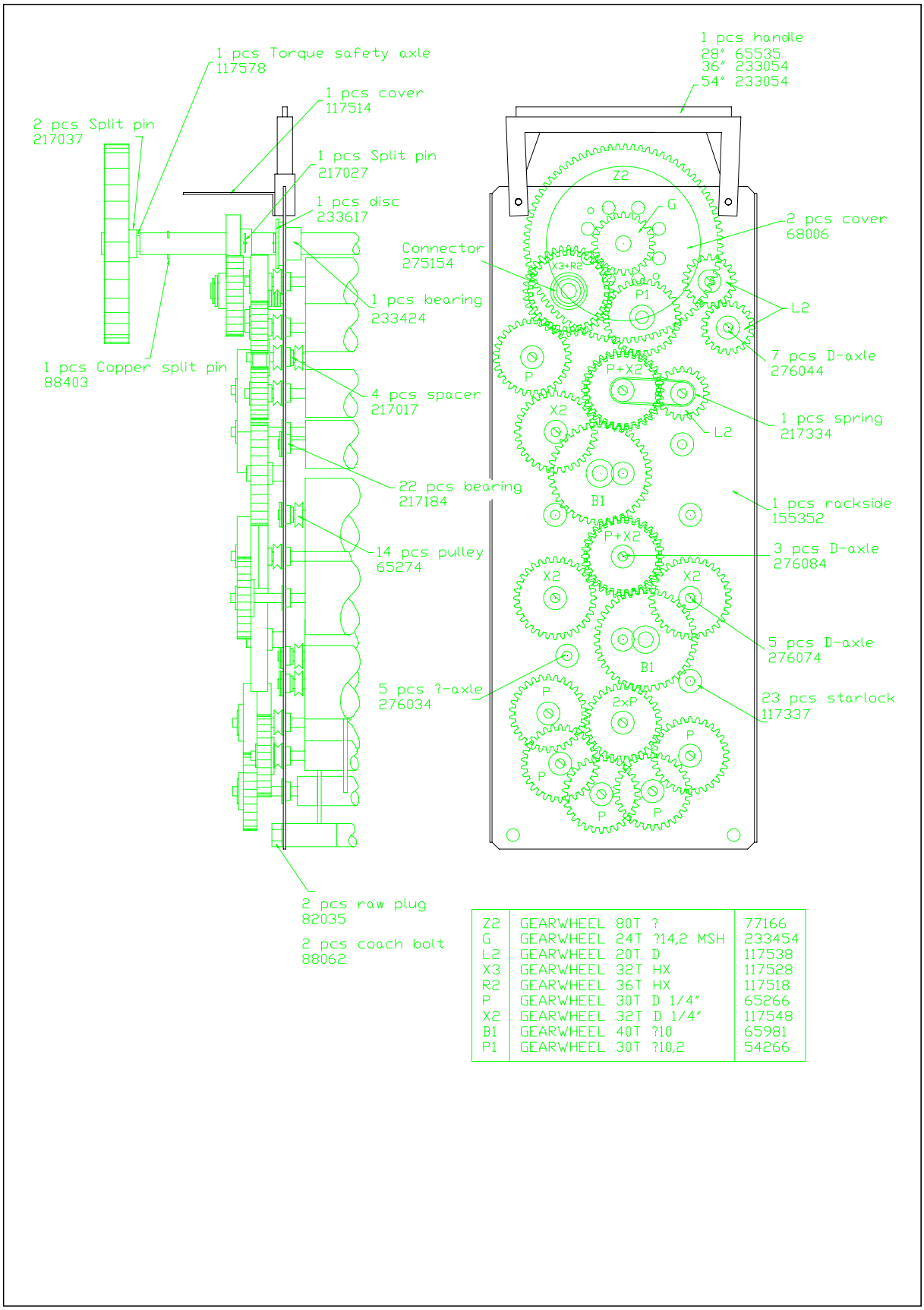
Roller Position Developer Unitrac 1, Drawing 5112C



ROLLER	28″	36″	54″	65″
1 1/4″ hard rubber	128227	136227	155227	650264
1 1/4″ soft rubber	128284	136284	155284	650284
1 7/8″ soft rubber	128274	136274	155274	650274
1 7/8″ polyurethan	128483	136483	155483	650254 (HR)
1″ soft rubber	234227	61132	54132	650234
D+1 7/8″ roll guide	128789	136789	155789	650789
D1+L□+1 7/8″ roll guide	128799	136799	155799	650799

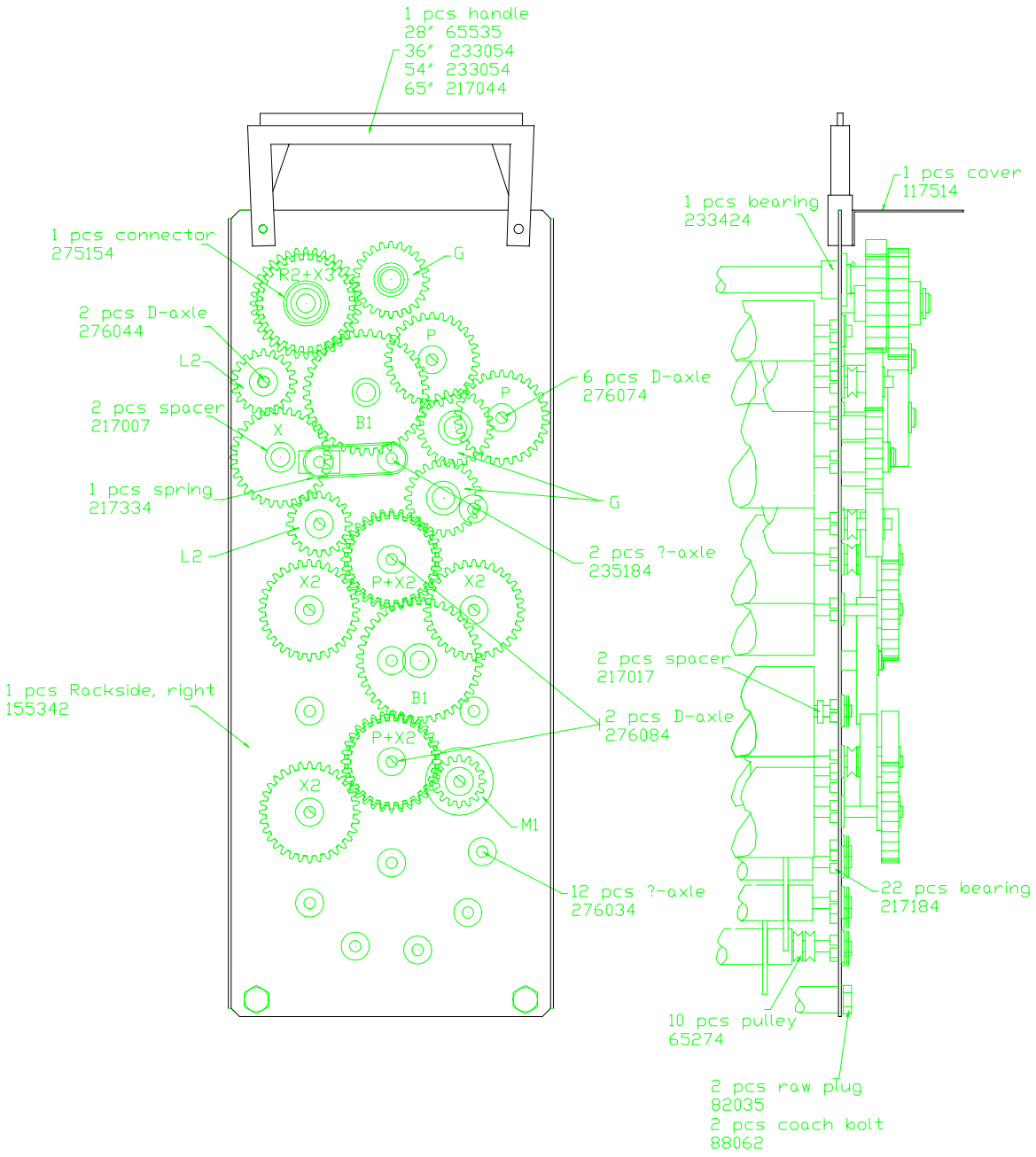
AXLES	
D	276044
D1	276074
D2	276084
□	276034
L□	235184

Roller Position Fix+Water Unitrac 1, Drawing 5937C



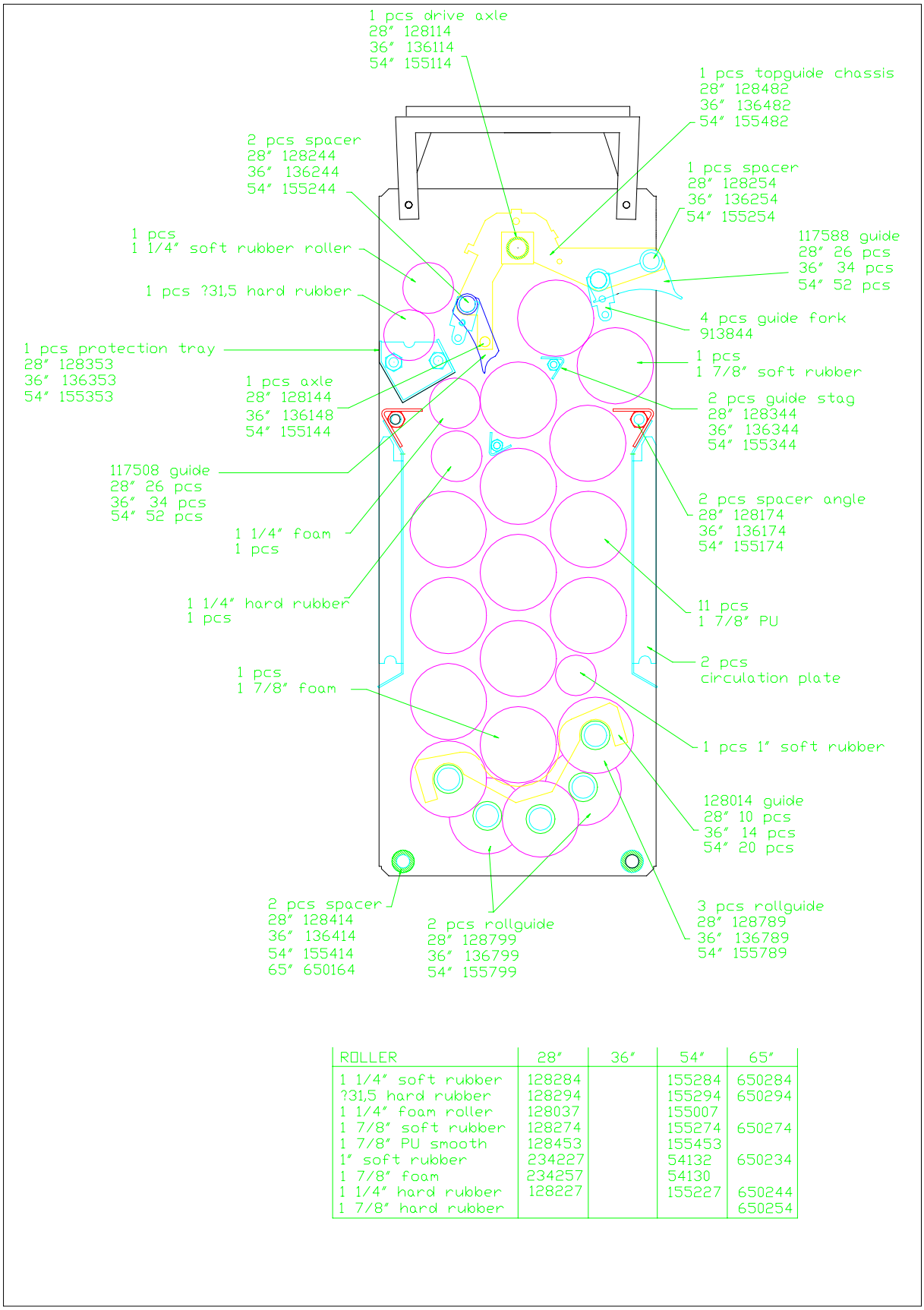
Z2	GEARWHEEL 80T ?	77166
G	GEARWHEEL 24T ?14,2 MSH	233454
L2	GEARWHEEL 20T D	117538
X3	GEARWHEEL 32T HX	117528
R2	GEARWHEEL 36T HX	117518
P	GEARWHEEL 30T D 1/4"	65266
X2	GEARWHEEL 32T D 1/4"	117548
B1	GEARWHEEL 40T ?10	65981
P1	GEARWHEEL 30T ?10,2	54266

Gearwheel Position Unitrac 2, Drawing 5940



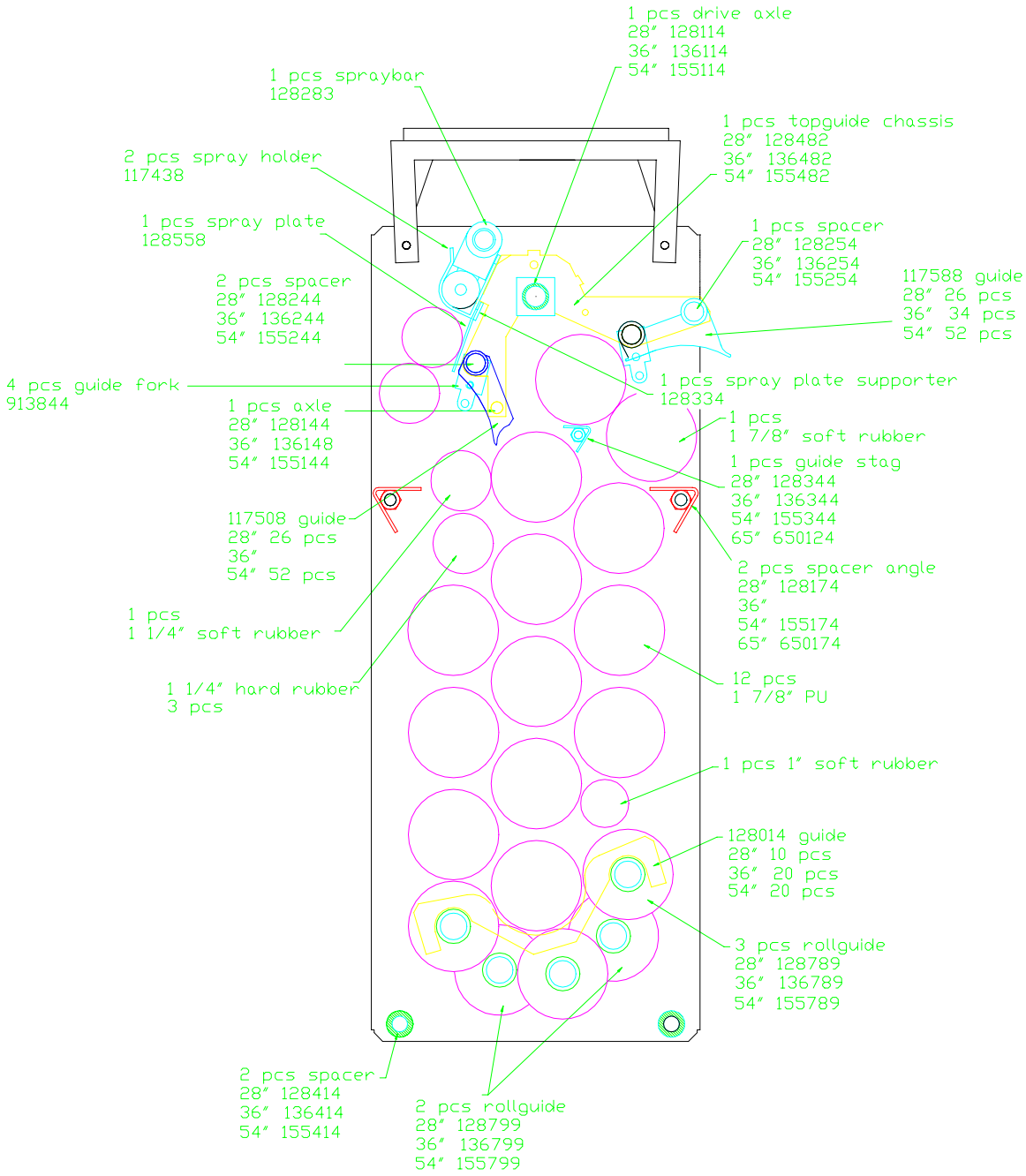
G	GEARWHEEL 24T ?14,2 MSH	233454
R2	GEARWHEEL 36T HX	117518
X3	GEARWHEEL 32T HX	117528
P	GEARWHEEL 30T D 1/4"	65266
L2	GEARWHEEL 20T D	117538
B1	GEARWHEEL 40T ?10	65981
X	GEARWHEEL 32T ?10	65993
X2	GEARWHEEL 32T D 1/4"	117548
M1	GEARWHEEL 16T D 1/4" W. LOCK	275037

Gearwheel Position Unitrac 2, Drawing 5941



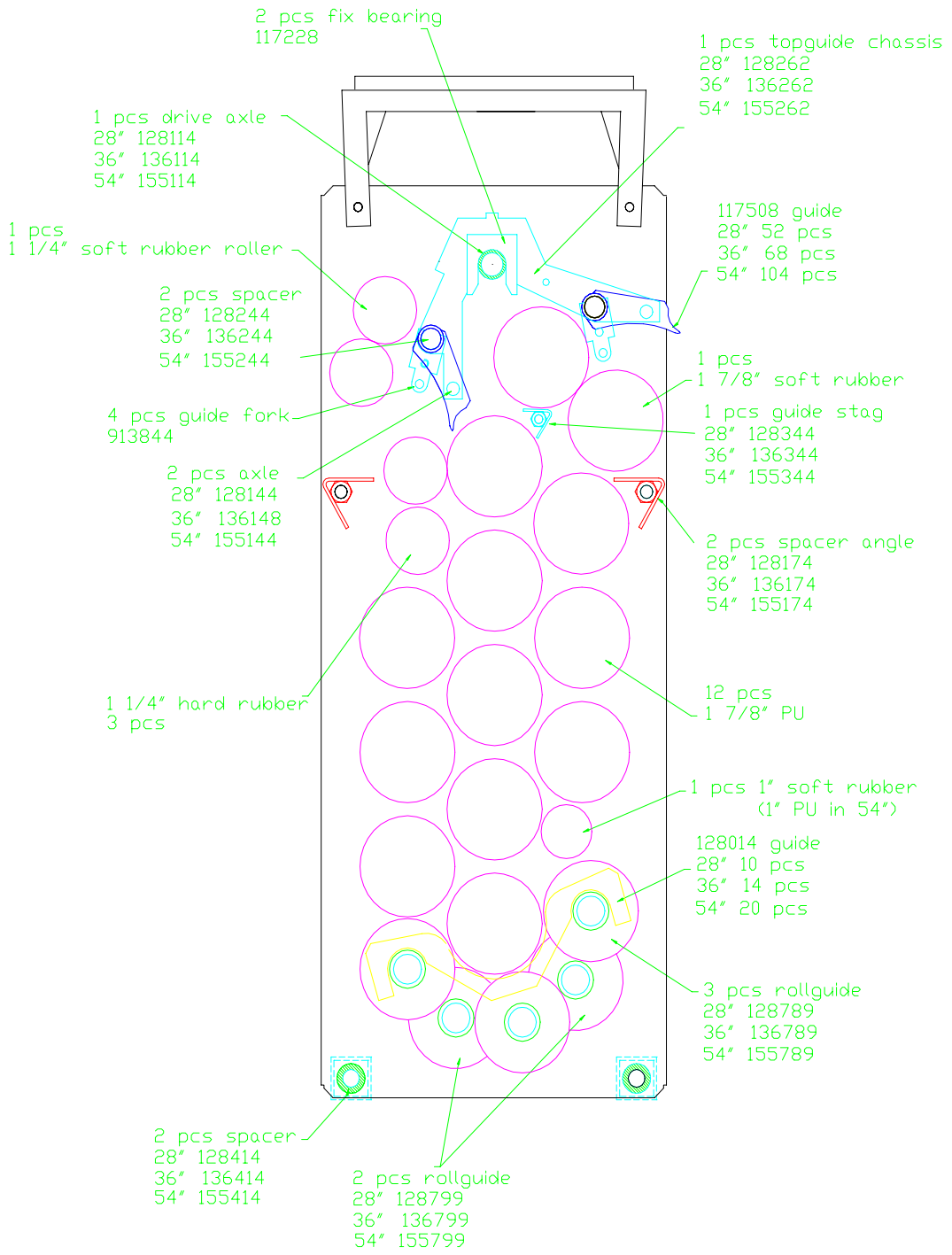
ROLLER	28"	36"	54"	65"
1 1/4" soft rubber	128284		155284	650284
?31,5 hard rubber	128294		155294	650294
1 1/4" foam roller	128037		155007	
1 7/8" soft rubber	128274		155274	650274
1 7/8" PU smooth	128453		155453	
1" soft rubber	234227		54132	650234
1 7/8" foam	234257		54130	
1 1/4" hard rubber	128227		155227	650244
1 7/8" hard rubber				650254

Roller Position, Dev No2 Unitrac 5942



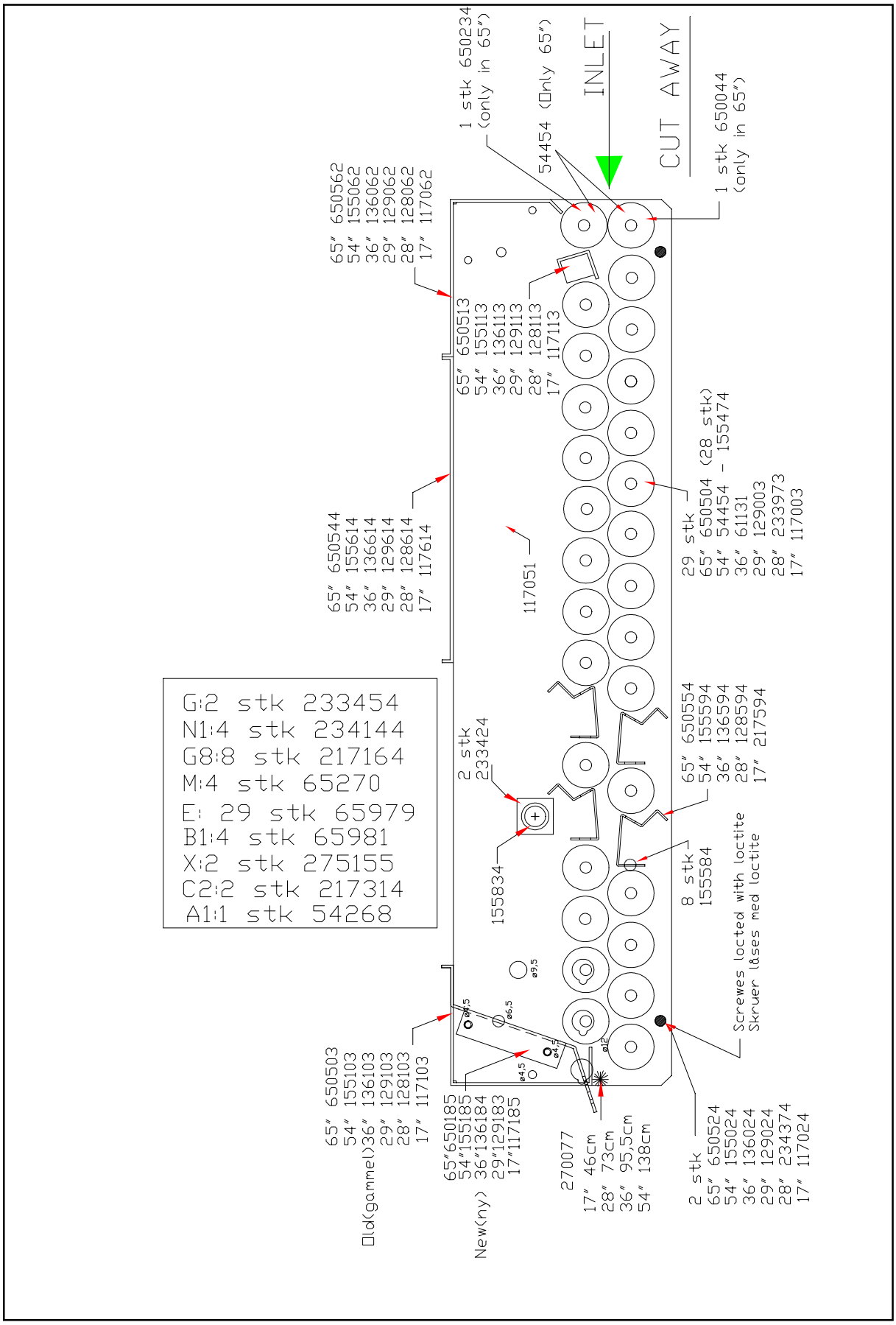
ROLLER	28"	36"	54"	65"
1 1/4" soft rubber	128284		155284	650284
1 1/4" hard rubber	128227		155227	650244
1 7/8" soft rubber	128274		155274	650274
1 7/8" PU smooth	128453		155453	
1" soft rubber	234227		54132	650234
1 7/8" hard rubber				650254

Roller Position, Fix No2 Unitrac 5943

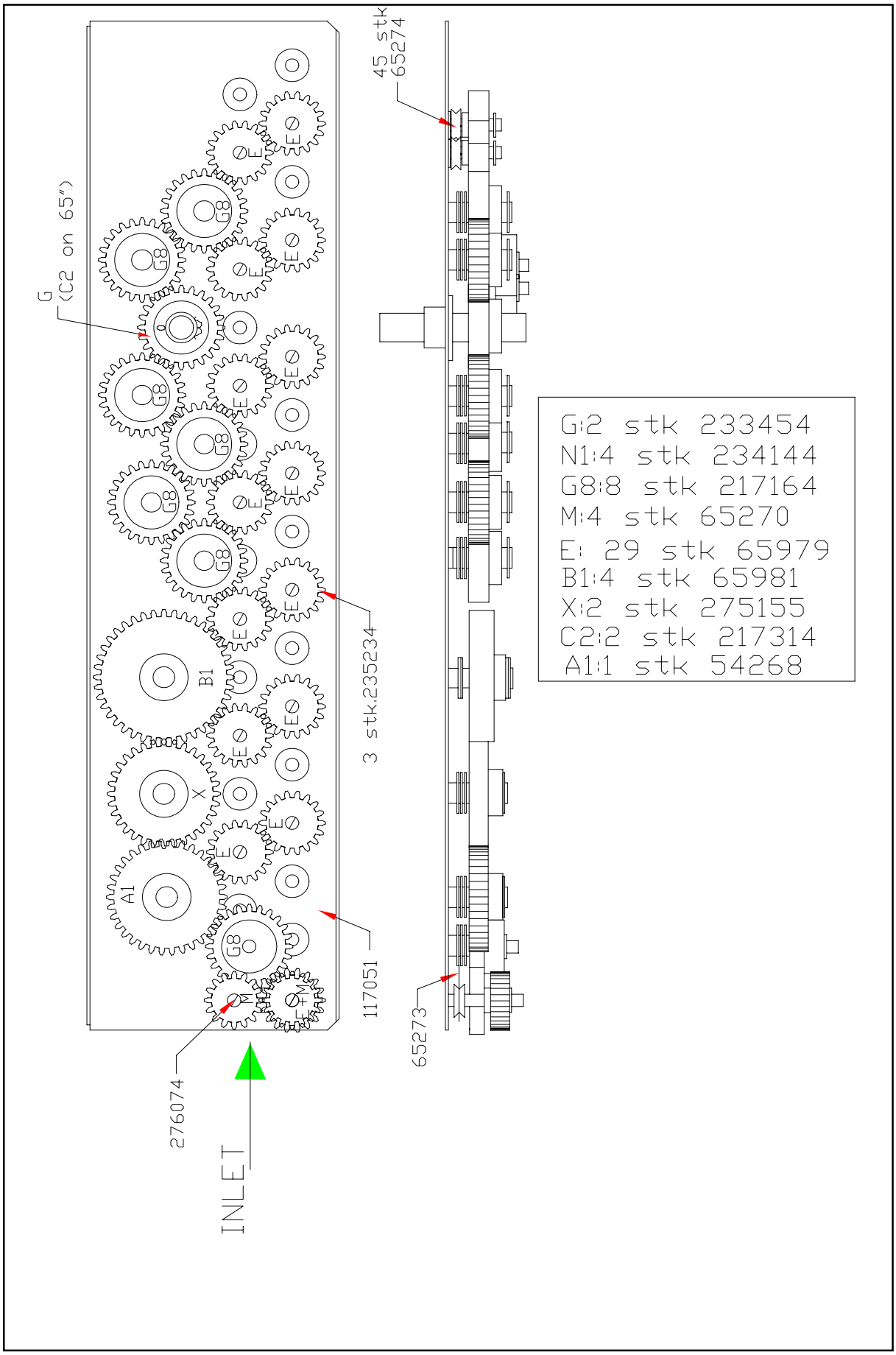


ROLLER	28"	36"	54"	65"
1 1/4" soft rubber	128284		155284	650284
1 1/4" hard rubber	128227		155227	650244
1 7/8" soft rubber	128274		155274	650274
1 7/8" PU smooth	128453		155453	
1" soft rubber	234227		54132	650234
1 7/8" hard rubber				650254
1" PU			155023	

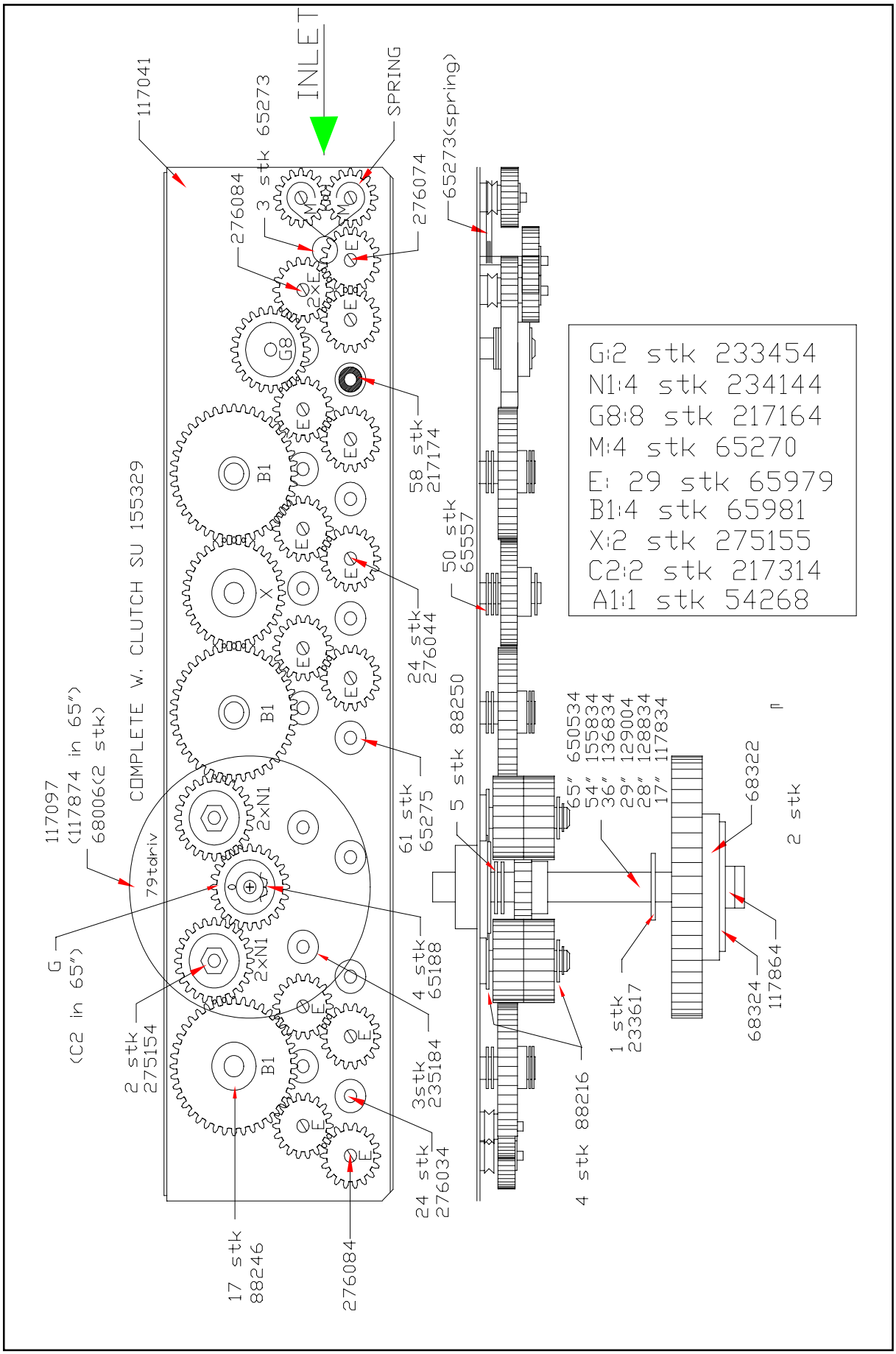
Roller Position, Wash No2 Unitrac 5944



Dryer Rack Roller Posistion 5930C



Dryer Rack Gearwheel Left Posistion 5930B



Dryer Rack Gearwheel Right Posistion 5930A

Complete Roller Overview

Roller Types	17"	28"	29"	36"	54"	65"
5/8" PU Roller	217023	128047	129534			
5/8" Steel Roller				136544	155536	
13/16" Soft Rubber EPDM	117064	233627	129064	136374	155027	
25mm Aluminium Roller					155474	650504
25mm Steel Roller Solid						650044
25,2mm Soft Rubber EPDM	117074	128094	129074	136484	155084	
1" PU Roller	914009	233973	129013	136163	155023	
1" PVC Roller	217373		129223			
1" Soft Rubber EPDM	914006	234227	129054	136354	155355	650234
31,5mm Hard Rubber		128294			155294	
1 1/4" Foam Roller		128037			155007	
1 1/4" Hard Rubber		128227			155227	
1 1/4" Soft Rubber Roller		128284			155284	650284
1 7/8" PU Roller		128453			155453	650453
1 7/8" Foam Roller		234257			54130	
1 7/8" Soft Rubber Roller		128274			155274	650274
1 7/8" Steel Roller						650243

Complete Gearwheel View

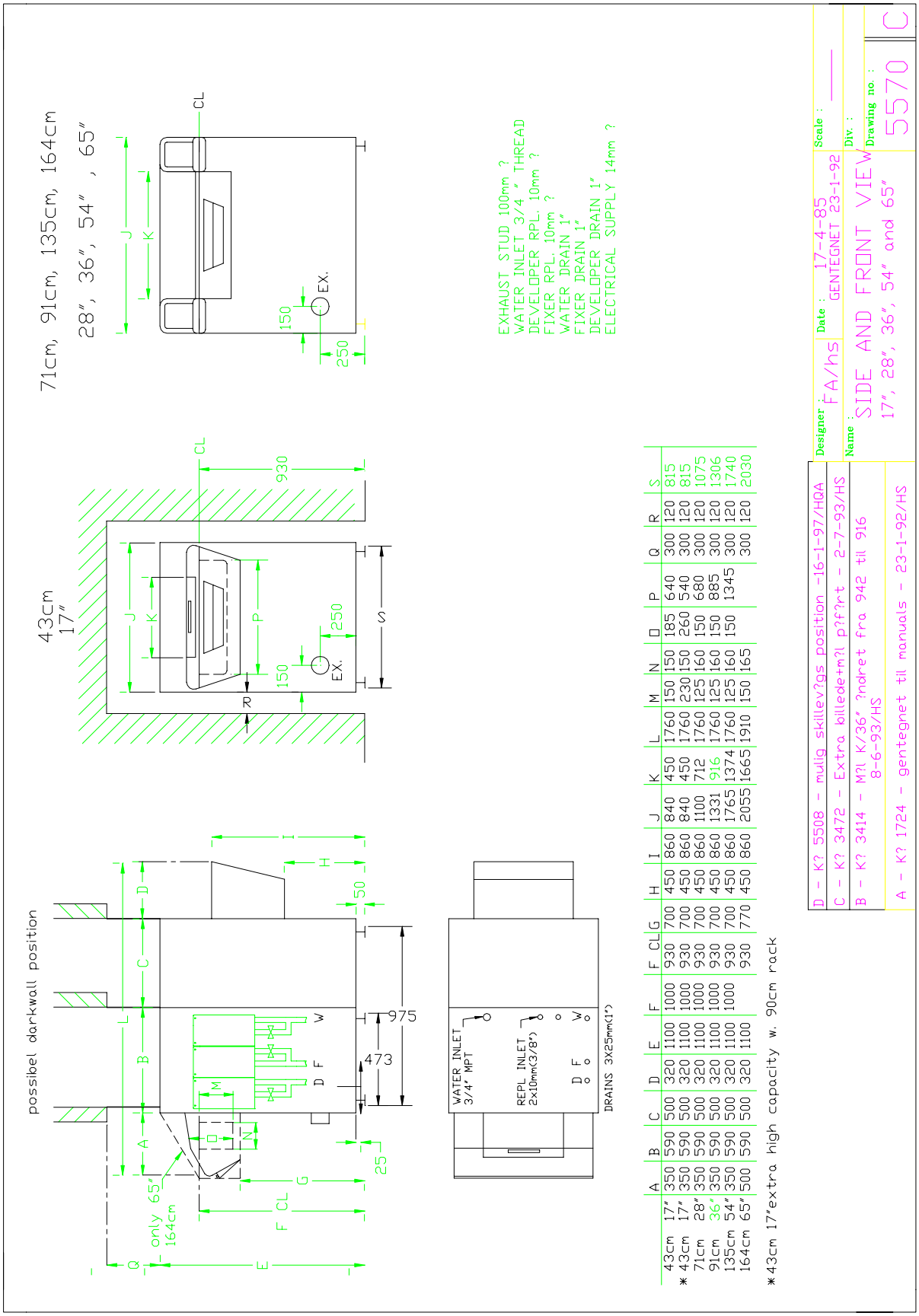
Number of Teeth	Type of Gearwheel	Drawing Identification	Shaft Diameter	Part NO:
10	D-Center Lock	A	1/4” D	217524
13	D-Center Lock	B	1/4” D	217484
16	D-Center Lock	M	1/4” D	217374
16	O-Center Lock	L	1/4” O	217364
16	D-Center Lock		1/4” D	217504
18	D-Center Lock	E	1/4” D	217474
18	O-Center Lock	Y	1/4” O	217354
20				276037
24	O-Center Lock	G1	10,2mm	276154
24	O-Center Lock	G	14,2mm (*	217534
24	O-Center Lock	N	1/2” O	65268
24	O-Center Lock	N1	1/2” O, 17mm wide type	68011
25	O-Center Lock		10mm (*	66689
30	O-Center Lock	P1	10,2mm (*	54266
30	D-Center Lock	P	1/4” D	217414
30	O-Center Lock	O	1/4” O	217344
32	O-Center Lock	X	10mm	217434
32	Hexagon		Hexagon	217394
34	O-Center Lock	A1	10mm	54268
35	O-Center Lock	Q	10mm (*	66248
36	O-Center Lock	R	10,2mm	217424
36	O-Center Lock	S	10mm (*	65502
36	O-Center Lock		Hexagon	217384
37	O-Center Lock	W	10mm (*	66263
40	O-Center Lock	B1	10mm	65981
42	O-Center Lcok	J	10,2mm	217464
48	O-Center Lock	K	10,2mm	233454
48	Hexagon		Hexagon	217347
79	O-Center Lock	V	10mm (*	63186
79	Hexagon	H	Hexagon	65960
80	O-Center Lock	U	10mm (*	65456
80	Hexagon		Hexagon	
80	O-Center Lock		F. Microswitch	60210
80			Special	276017

(* With hole for Cotter Pin

Number of Teeth	Type of Gearwheel	Drawing Identification	Shaft Diameter	Part NO:
16+18	O-Center Lock	D	16,2mm Dual Gear	233434
16+18	O-Center Lock	D1	10mm Dual Gear	68807
36+24	Gearwheel for Rewinder		Special	250064
48+32	O-Center Lock	C	10,2mm	276104
48+36	O-Center Lock	F	10,2mm	276114
32+36	Hexagon	SX	Hexagon	68216
Steel Gearwheels:				
25	O-Center Lock		15mm	65888
32	Hexagon		Hexagon	117528
34	D-Center Lock		15mm	270517
36	O-Center Lock		Hexagon	117518
60	O-Center Lock		15mm	65218
62	O-Center Lock		15mm	65707

NOTE

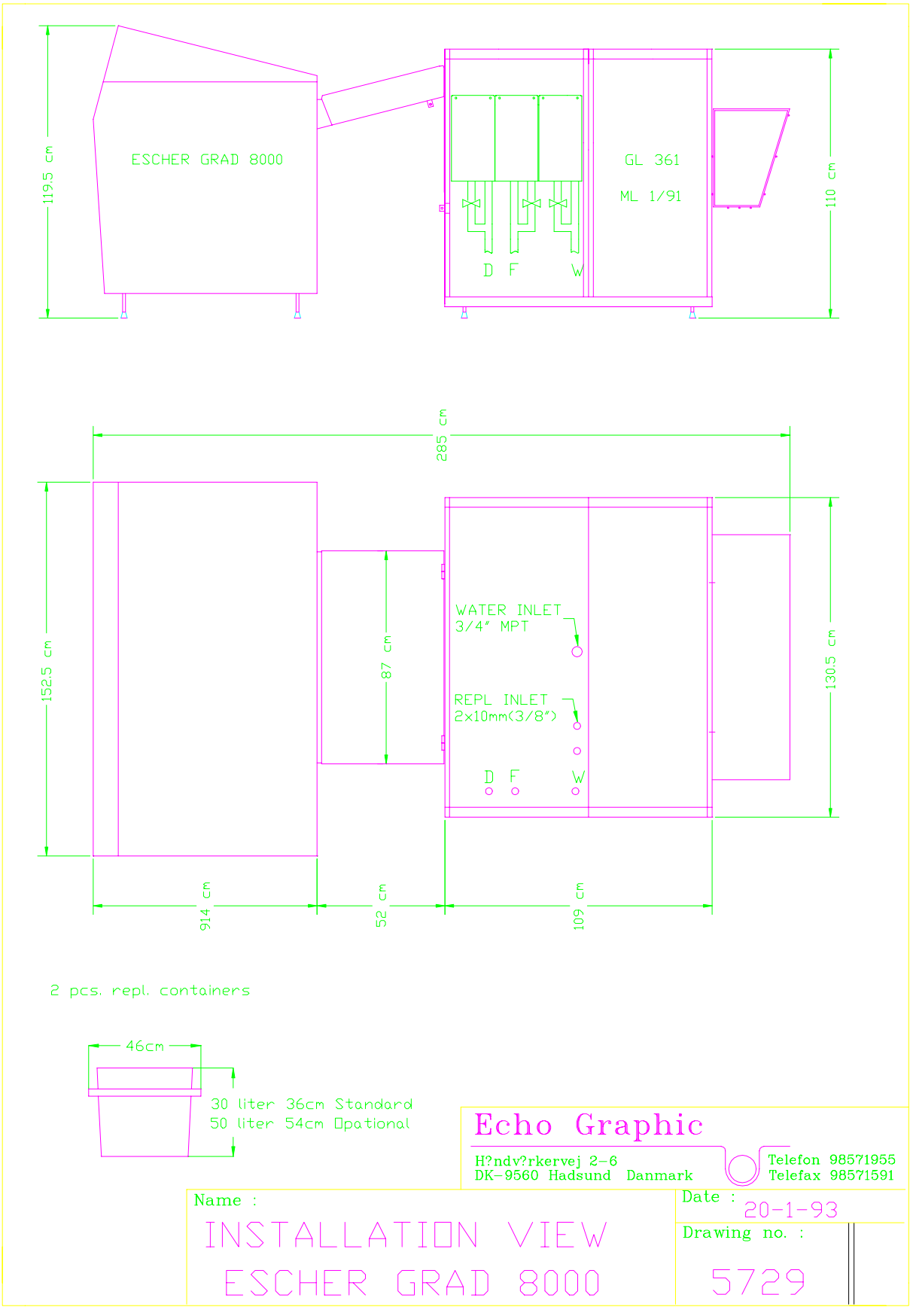
All partnumber are always printed on the gearwheel it self.

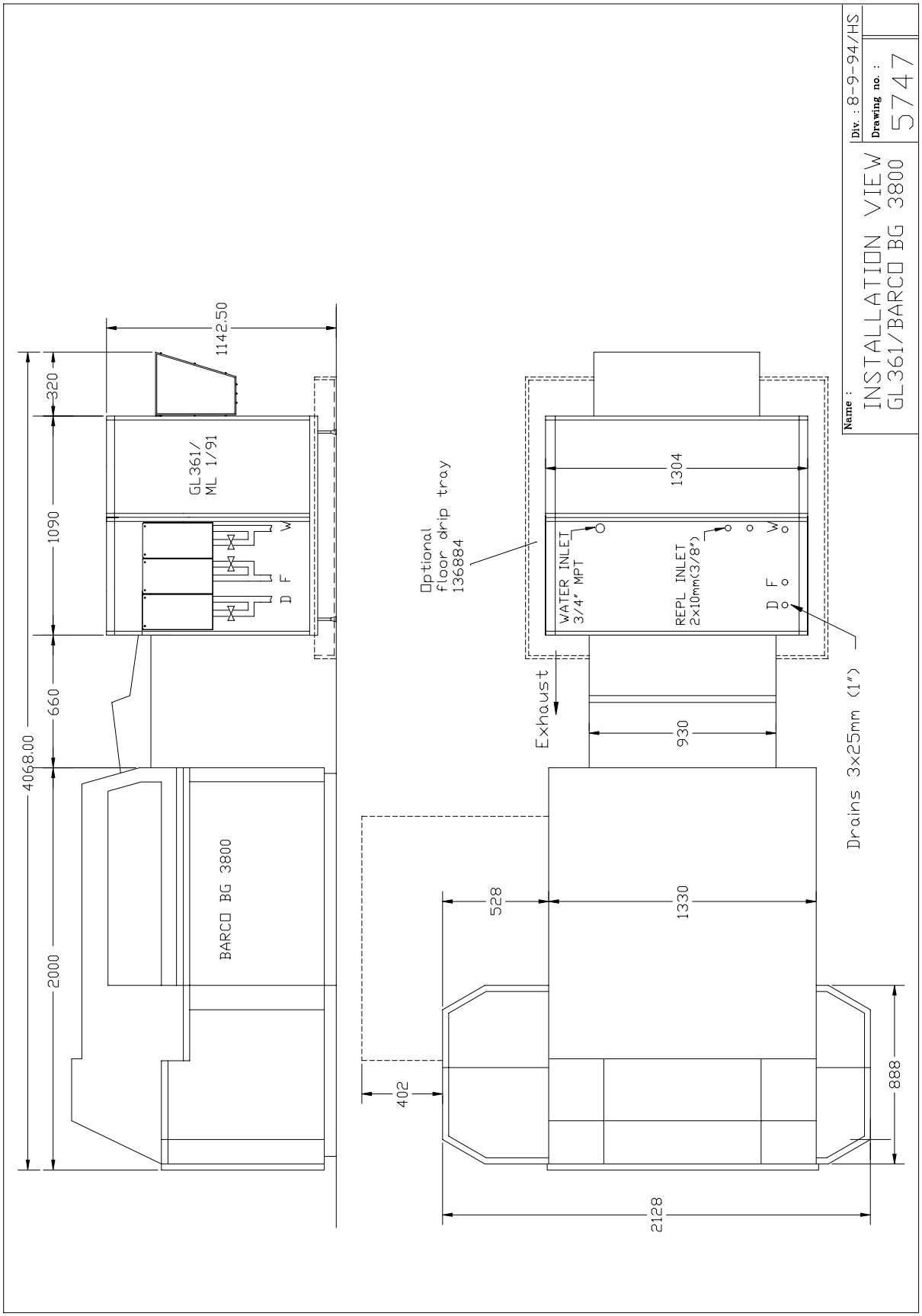


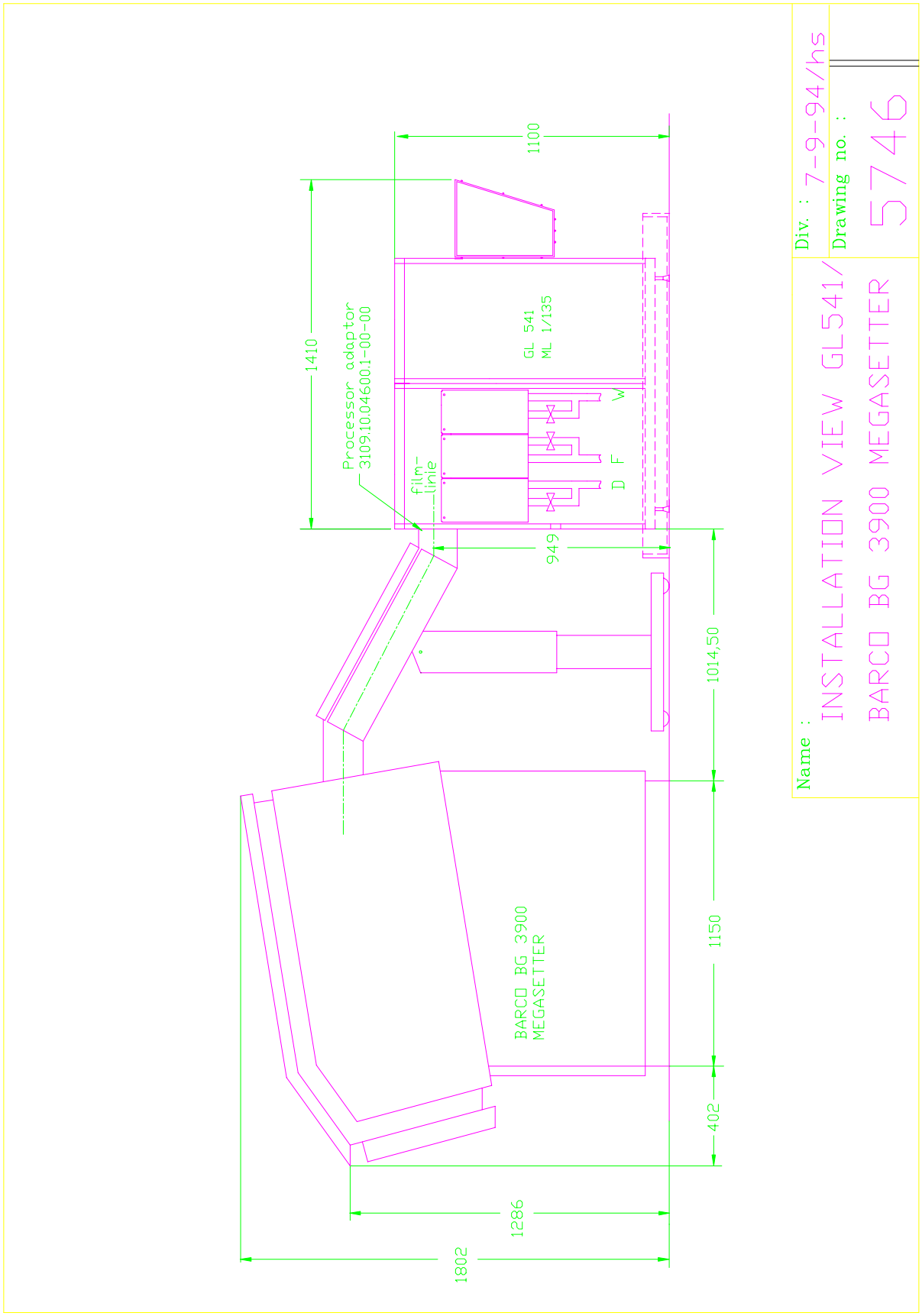
	A	B	C	D	E	F	F CLG	H	I	J	K	L	M	N	O	P	Q	R	S
43cm 17"	350	590	500	320	1100	1000	930	700	450	860	840	450	1760	150	150	185	640	300	120	815
*43cm 17"	350	590	500	320	1100	1000	930	700	450	860	840	450	1760	230	150	260	540	300	120	815
71cm 28"	350	590	500	320	1100	1000	930	700	450	860	1100	712	1760	125	160	150	680	300	120	1075
91cm 36"	350	590	500	320	1100	1000	930	700	450	860	1331	916	1760	125	160	150	885	300	120	1306
135cm 54"	350	590	500	320	1100	1000	930	700	450	860	1765	1374	1760	125	160	150	1345	300	120	1740
164cm 65"	500	590	500	320	1100		930	770	450	860	2055	1665	1910	150	165			300	120	2030

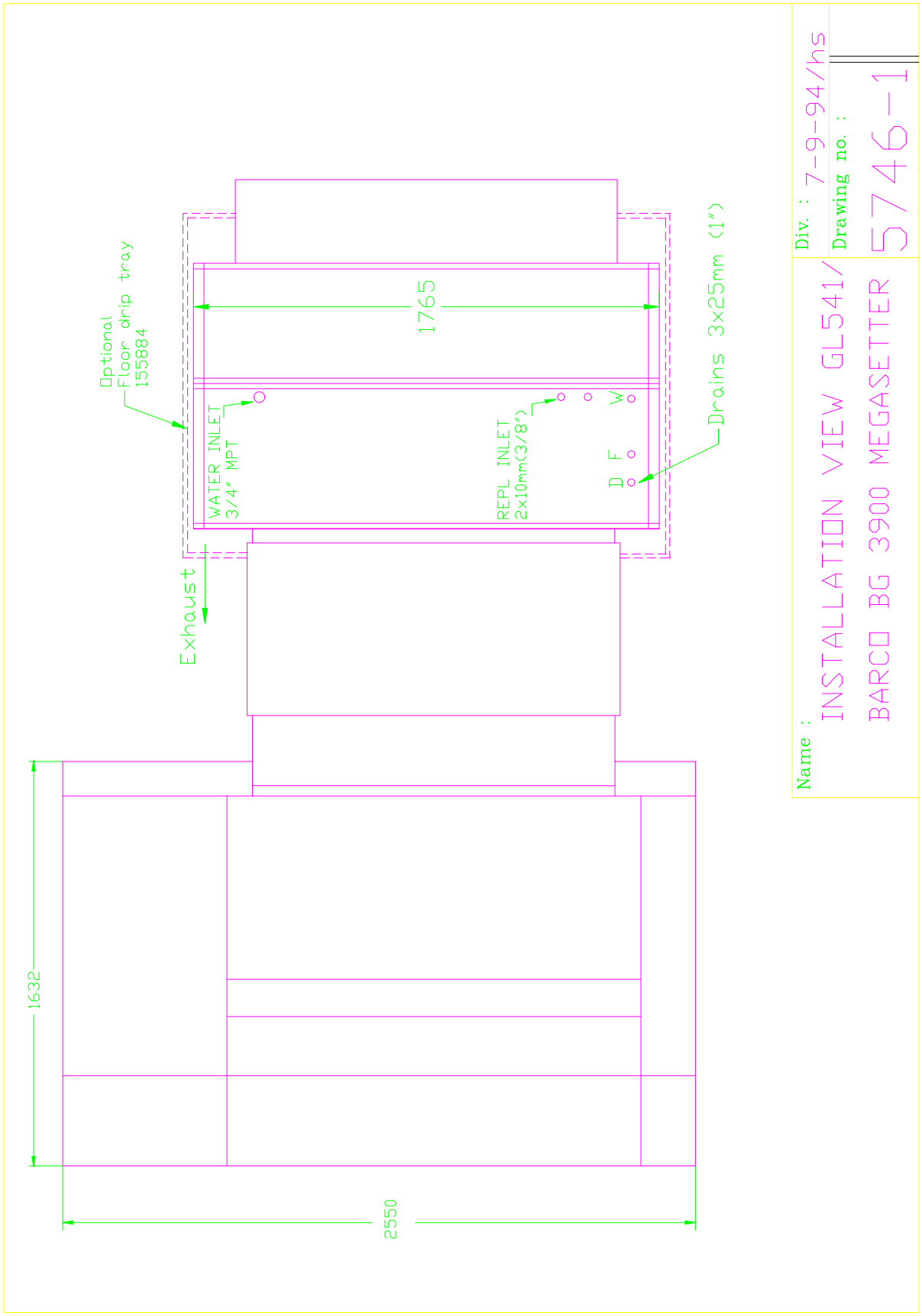
*43cm 17"extra high capacity w. 90cm rack

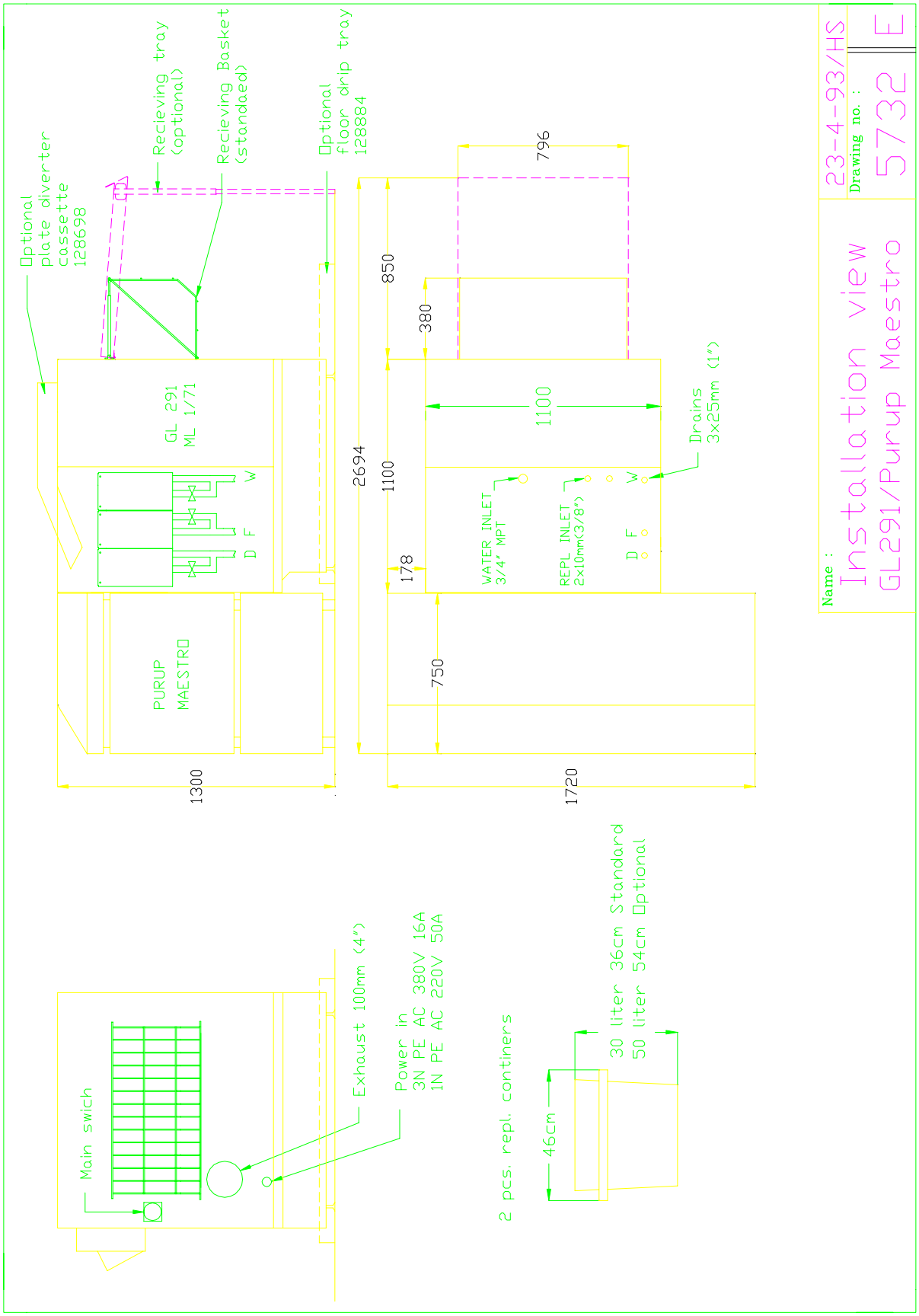
Dimensions 5570


119.5 cm
ESCHER GRAD 8000
GL 361
ML 1/91
110 cm
D F W
285 cm
152.5 cm
87 cm
WATER INLET
3/4" MPT
REPL INLET
2x10mm(3/8")
D F W
130.5 cm
91.4 cm
52 cm
109 cm
2 pcs. repl. containers
46cm
30 liter 36cm Standard
50 liter 54cm Opational
Echo Graphic
H?ndv?rkervej 2-6
DK-9560 Hadsund Danmark
Telefon 98571955
Telefax 98571591
Name :
INSTALLATION VIEW
ESCHER GRAD 8000
Date : 20-1-93
Drawing no. :
5729

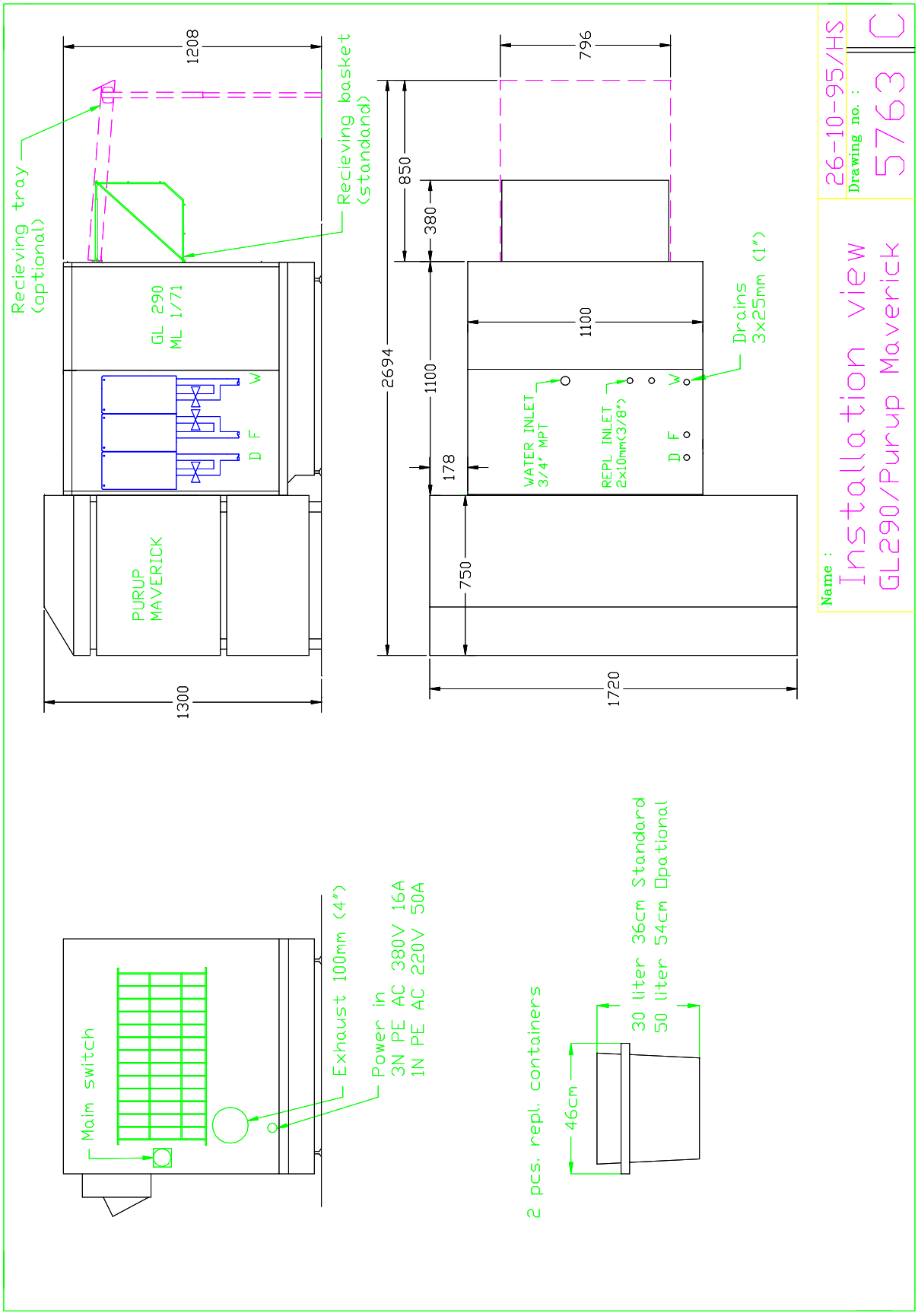

Name :
INSTALLATION VIEW
GL361/BARCO BG 3800
Div. : 8-9-94/HS
Drawing no. : 5747
1142.50
320
1090
660
4068.00
2000
GL361/
ML 1/91
D F
W
BARCO BG 3800
Optional
floor drip tray
136884
1304
WATER INLET
3/4" MPT
REPL INLET
2x10mm(3/8")
D F
W
Exhaust
930
Drains 3x25mm (1")
528
1330
402
888
2128


1100
1410
Processor adaptor
3109.10.04600.1-00-00
GL 541
ML 1/135
film-
line
W
D F
949
1014,50
1150
402
BARCO BG 3900
MEGASETTER
1286
1802
Name :
INSTALLATION VIEW GL541/
BARCO BG 3900 MEGASETTER
Div. : 7-9-94/hs
Drawing no. :
5746

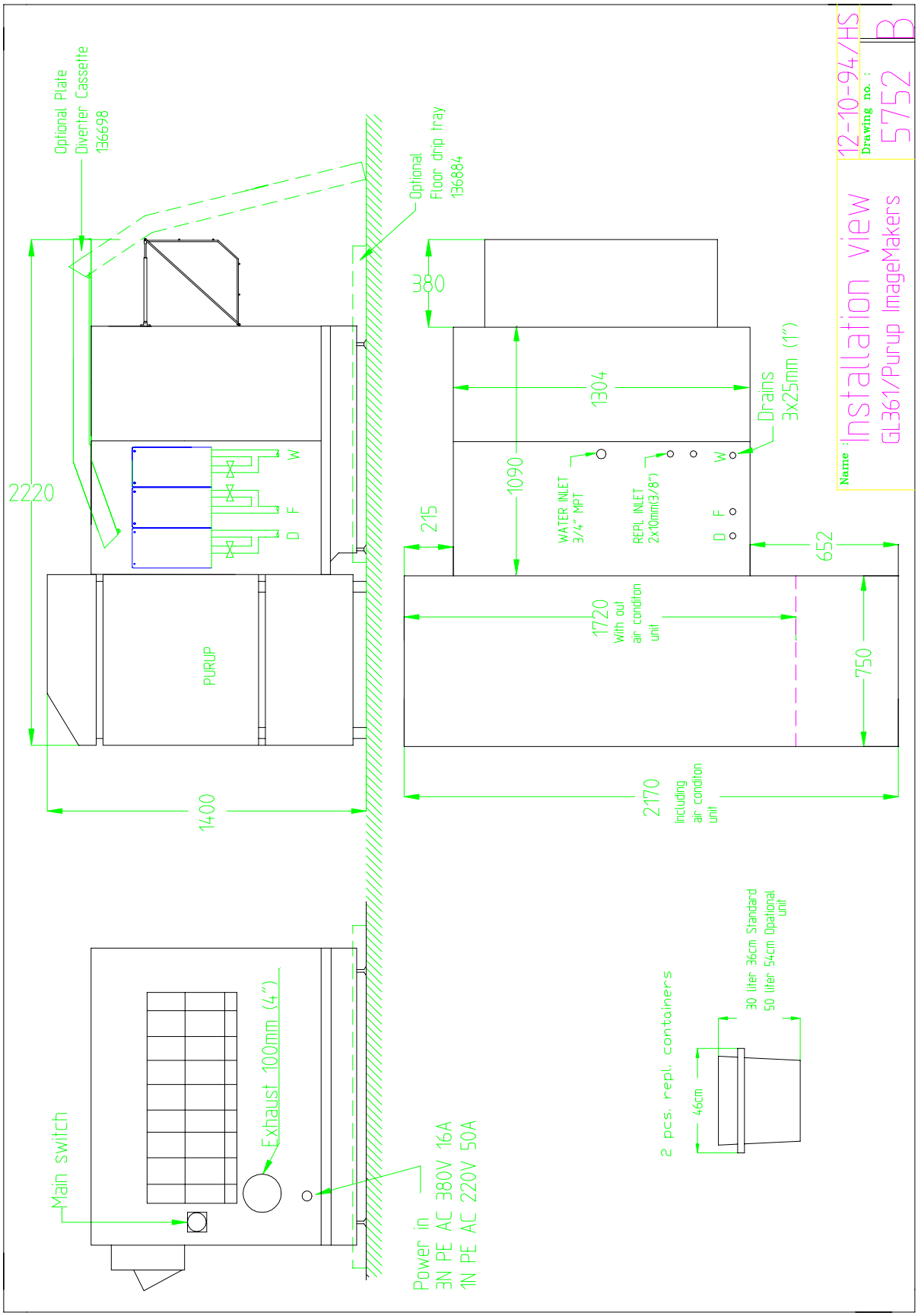

Optional
Floor drip tray
15584
1765
Drains 3x25mm (1")
WATER INLET
3/4" MPT
REPL INLET
2x10mm(3/8")
D F W
Exhaust
1632
2550
Div. : 7-9-94/hs
Drawing no. : 5746-1
Name : INSTALLATION VIEW GL541/
BARCO BG 3900 MEGASETTER



Installation view GL 281 On-Line Purup Maestro



Installation view GL 281 On-Line Purup Maverick / Mercery



Installation view GL 281 On-Line Purup Magnum