GENERAL INFORMATION

This manual contains all valuable information for installation, starting-up, maintenance, spare parts and troubleshooting for following machine:

Sort of Machine	:	**Washer-Extractor**
Type	:	
Fabrication number	:	
Voltage	:	
Order	:	
Year	:	
Manufactured by	:	**IPSO-JENSEN BELGIUM**
Dealer	:	
Order number	:	
Customer	:	

Above data figures also on the nameplate of the machine.

Please read and understand this manual before attempting the installation, operation of servicing of this machine.

This manual contains valuable information for you, therefore keep it in an easily accessible and safe place.

The descriptions in this manual are for standard execution and not all possible optionals are included.

Should you require any additional information about your machine, please do not hesitate to contact your nearest dealer or directly IPSO-JENSEN mentioning machine type and fabrication number.

SUBJECT TO CHANGES WITHOUT PRIOR NOTIFICIATION

INDEX

WARRANTY – LIABILITY

D'HOOGE warrants all new machinery of its manufacture for 1 year of max 1600 hours of operation which ever occurs first, from the date of the starting-up or max 1 month after despatch ex the Company unless otherwise is expressed in writing by the Company.

The warranty is limited to replace free of charge any component or part manufactured by the Company which is returned carriage paid and do not cover the labour and other costs.

Wear and tear parts are excluded from this warranty.

The Company will not extend this warranty and liability:

- by alteration or installation of non-original parts unless otherwise is expressed in writing by the Company
- when the equipment has been used outside the limits stated in the instruction manual of this particular machine
- by installation, operation and/or maintenance by unqualified persons
- by damage or wear and tear caused by external forces

Our machines are designed according the most advanced technologies demanding as little maintenance and repair as possible, nevertheless we insist to follow carefully the maintenance instructions in our manuals, otherwise any warranty and liability cease to be valid.

The dealer is responsible to check if the electrical and mechanical execution of the machine is in accordance with the local security rules.

USE WASHER-EXTRACTOR

The Washer-Extractors developed and constructed by D'Hooge may only be used for washing and extracting of textiles absorbing max 250 % water.

It's the users responsibility to divide the load equally over the different compartments of the innerdrum for washer extractors with divided drums.

In the case of loading large pieces or washing nets in an open pocket drum, the minimum number of pieces or nets has to be equal to the number of beaters in the drum.

It's the users responsibility to avoid the use of washing or rinsing chemicals corroding the material of drum and outer shell (AISI 304 – DIN 4301). By doubt contact D'Hooge.

Do not add chemicals evaporating dangerous vapours for the operators.

Never start the Washer-Extractor before removing the red painted transportation plates, studs, screw, etc …

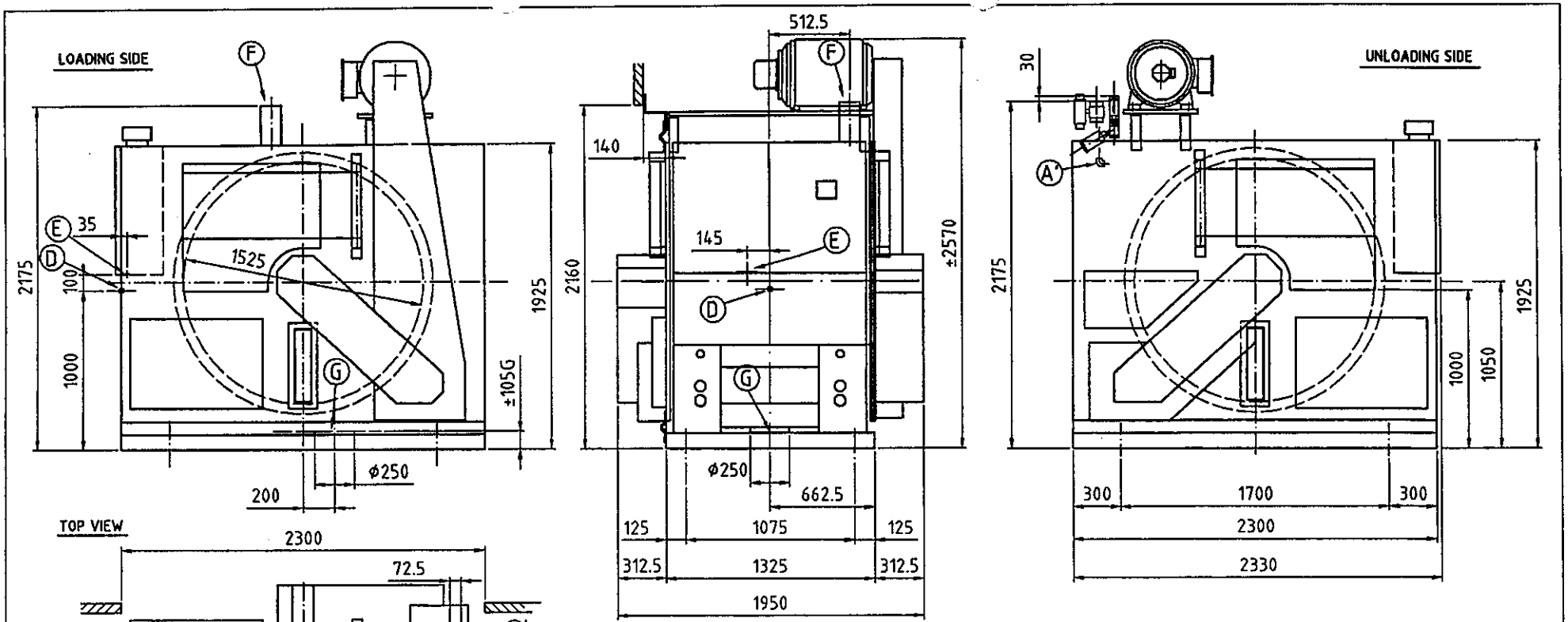
The Washer-Extractor may be installed in each drip waterproof room with a max moisture degree of 95 % and a temperature of min 5°C and max 45°C

TECHNISCHE GEGEVENS WAS-CENTRIF.	CARACTERIST. TECHNIQUES LAV.-ESSOR.	TECHNICAL DATA WASHER-EXTR	TECHNISCHE DATA WASCH-ZENTRIFUGE	WE 2050(H) SP	
Max.belading	Charge max.	Max. load	Max. Beladung	kg Lbs	200 440
Inhoud	Capacité	Capacity	Inhalt	dm^3 Cu.ft	2050 72,5
Motor	Moteur	Motor	Motor	kW	30
Frekwentiereg.	Variateur de fréq.	Frequency convert.	Frequenz umrichter	kW	30
Electr.voeding	Alimentat. électr.	Electric power	Elektrische Anschluss	VAC 3 x 400	(±5%)
Aansluit.3x400V	Raccord.3x400V	Connect.3x400V	Anschl.3x400V	mm^2	3 x 10
Zekeringen 400 V	Fusibles 400V	Fuses 400V	Sicherungen 400V	A	50
Waterdruk	Pression d'eau	Water pressure	Wasserdruck	bar	1 - 8
Water/proces	Eau/processus	Water/process	Wasser/Wäschegang	L BIG	3500-4800 770-1055
Waterdebiet	Débit d'eau	Water flow	Wasser Anschluss	L/sec BIG	15 3
Stoomdruk	Pression vapeur	Steam pressure	Dampdruck	bar	2 - 9
Stoom/proces	Vapeur/process.	Steam/process	Dampf/Wäschegang	kg	170
Stroomdebiet	Débit de vapeur	Steam flow.	Dampf Anschluss	kg/h Lbs/h	600 1320
Persluchtdruk	Air comprimé	Compressed air	Druckluft	bar	6 - 9
Persluchtaansl.	Air compr.racc.	Air connection	Druckluft Anschluss	L/min	250
Gewicht	Poids	Weight	Gewicht	kg 5100(SP) Lbs 11240(SP)	5300 (HSP) 11680 (HSP)
Geluidsniveau	Niveau sonore	Noise level	Schallpegel		
Wassen	Lavage	Washing	Waschen	dB(A)	72
Stoom injectie	Injection de vapeur	Steam injection	Dampf injektion	dB(A)	75
Centrifug. (piek)	Essorage (pointe)	Extraction (peak)	Schleudern (höchst)	dB(A)	85

3 x 200 - 240V 50Hz/60Hz.

Aansluit.3x220V	Raccord.3x220V	Connect.3x220V	Anschluss.3x220V	mm^2	3 x 25
Zekeringen 220V	Fusibles 220V	Fuses 220V	Sicherungen 220 V	A	80

+ AUTO TRANSFO PRIM 3 x 220 VAC / SEC 3 x 400 VAC 35 kVA



WATER KRANEN 2"1/2" OPTIE
VANNES D'EAU 2"1/2" OPTION
WATER VALVES 2"1/2" OPTION
WASSER VENTILEN 2"1/2" OPTION

A	KOUD HARD WATER EAU FROIDE DURE COLD HARD WATER KALTES HARTES WASSER	2"	D	PERSLUCHT AIR COMPRIME COMPRESSED AIR PRESSLUFT	1/4"
A'	KOUD HARD WATER EAU FROIDE DURE COLD HARD WATER KALTES HARTES WASSER	3/4"	F	ONTLUCHTING ASPIRATION EXHAUST ENTLUEFTUNG	ø130
B	WARM ZACHT WATER EAU CHAUDE DOUCE WARM SOFT WATER WARMES WEICHES WASSER	2"	G	WATERUITLAAT SORTIE D'EAU DRAIN WASSERABLAUF	ø250
C	STOOMTOEVOER ENTREE VAPEUR STEAMINLET DAMPFANNSCHLUSS	1"1/2"	E	ELECTRICITEIT ELECTRICITE ELECTRIC POWER ELEKTRISCHER ANNSCHLUSS	

Machine type: WE 2050 HSP			N°		
1/25	NAAM NAME	DATUM DATE	N.V. DHOOGE INDUSTRIES B–9050 GENT Belgium	VERVANGT: REPLACES:	MAATSCHETS CROQUIS COTE DIMENSIONED SKETCH MABSKIZZE
Getek/Drawn	WS	8-04-02		VERVANGEN DR: REPLACED BY:	PLANNUMMER: M21755
Nagz./Check					

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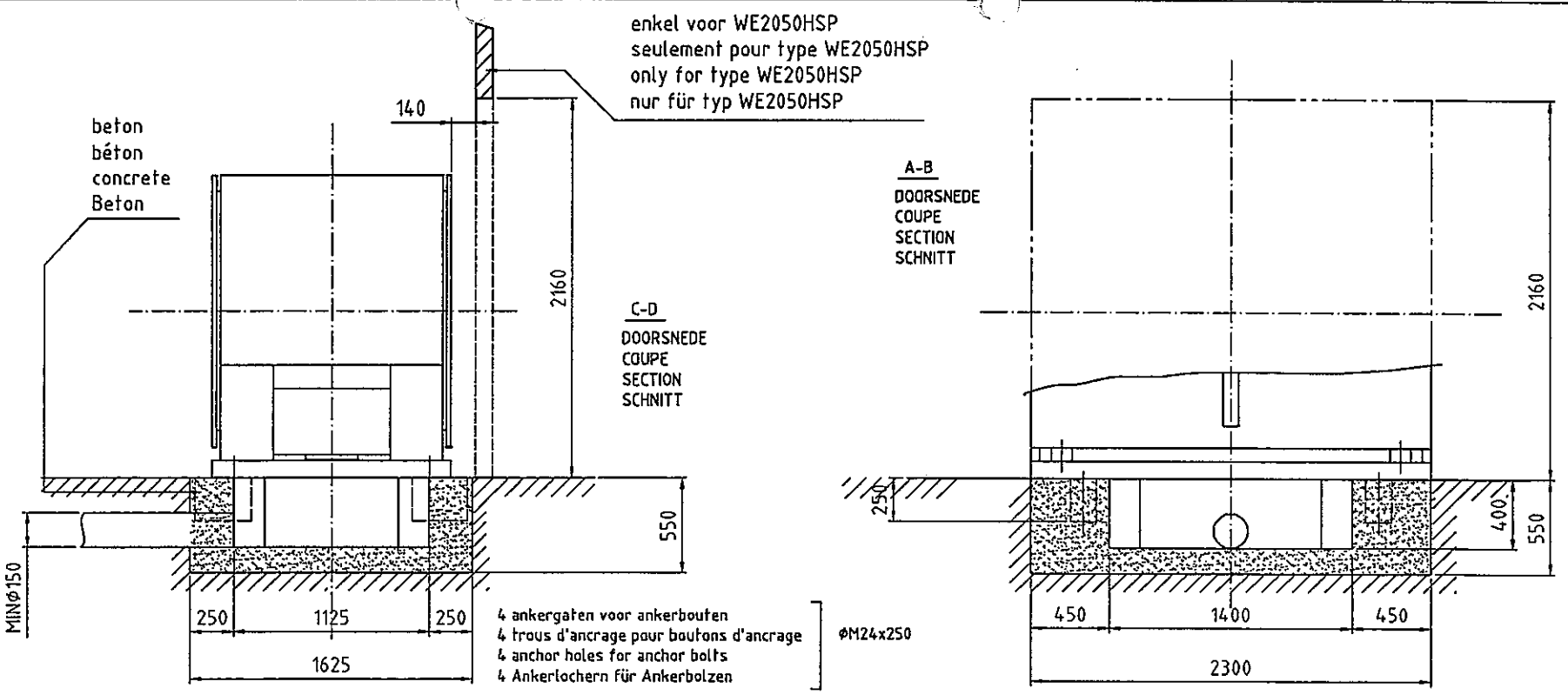

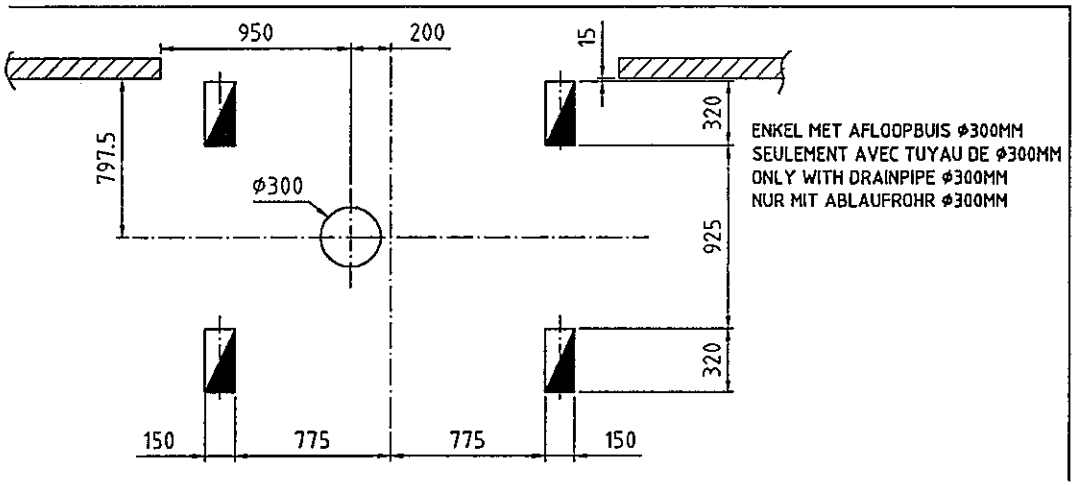

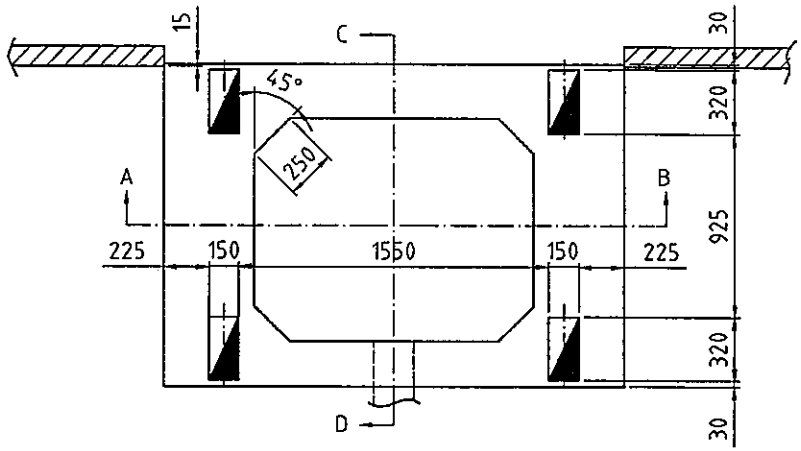

Machine type: WE 2050 (H)SP N°						
1/25	NAAM NAME	DATUM DATE	N.V. DHOOGE INDUSTRIES B–9050 GENT Belgium	VERVANGT: REPLACES:	FUNDERING FONDATION FOUNDATION FUNDAMENT	PLANNUMMER: M21752
Getek/Drawn	WS	4-02-02		VERVANGEN DR: REPLACED BY:		
Nagz./Check						

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SECURITY PROCEDURES SPLIT POCKET WASHER-EXTRACTORS WE980SP, WE1300SP, WE2050SP, WE 2910SP, WE1300HSP, WE2050HSP & WE 2910HSP

WARNING

1 Only authorised persons may operate the machine.
2 NEVER start loading or unloading when electrical power or compressed air supply is switched off.
3 NEVER switch off electric power or compressed air supply during loading or unloading.
4 When the bell rings: close inner door or keep inner door closed.
5 Concentrated liquid chemicals can cause injury or illness, operators should wear dapted clothing during handling concentrated chemicals.
6 Do not start the machine with removed security panels and do not remove the panels during operation.
7 Check monthly the working of the security functions such as emergency stop button, out of balance switch and door security.
8 Check monthly the connection of liquid chemicals for leaks during the operation.
9 Only authorised persons may make service or repair work to the machine.
10 Before starting service or repair work:
- switch off and lock main switch
- close compressed air supply
- close steam and water supply

11 Check every year the inner drum and especially the weldings.
12 If the machine is used for materials causing mechanical wear to the drum, the thickness of the drumplate has to be checked every 3 months.
13 Before starting repair work inside the drum follow the procedures under point 10 and:
- let cool-down and ventilate the inner drum before entering
- a second authorised person has to keep contact with the person inside the
- drum during the whole time of the work.

MAINTENANCE WE 1300 – 2050 – 2910 SP & HSP WITH FREQUENCY CONVERTER

WARNING

- ALWAYS complete lockout procedure BEFORE maintenance
- ALWAYS replace security panel BEFORE operating machine
- Failure to follow these instructions could result in SERIOUS INJURY or DEATH

Before starting maintenance or repair work on the machine:

- DISCONNECT THE MAIN SWITCH
- LATCH THE MAIN SWITCH

DAILY

- Check the air pressure for the shaft seals about 0,15 bar (only 1300 – 2050)
- Check the air pressure in the air springs before starting the machine
- Check incoming air pressure should be min 7 bar and max 9 bar.
- Check if the glass container of the air filter is empty.
- Check oil level in air lubricator.
- Rinse the special connection (if installed) for liquid chemicals.

WEEKLY

- Add oil in air lubricator and check regulation (see lubricating point 10)
- Check working of out-of-balance switch (Ss) installed at the rear side of the control box. Push down the finger of the switch during the 300 RPM of the machine
- Clean air inlet filters on control box door, clean inside control box and check working of fan in top of control box and all fans in bottom of frequency converter heat sink

AFTER FIRST TWO WEEKS

- Check anchor bolts.
- Check water and steam piping for leaks.
- Clean steam and water filters.
- Grease drum bearings – always use the same type of grease.
  Tighten all important screw connections: suspension, chock absorbers, drum bearings, motors and motorplate.
- Tighten all important electrical connections on: main switch, incoming terminals, contactors, frequency converter and inside motor connection box.

EVERY 3 MONTHS

- Check V-belts tension and regulate if necessary (see special page)
- Check shock absorbers for oil leakage and replace if necessary.
- Check brake lining.
- Grease motor bearings, bottom shaft bearings and drum bearings.
- Ventilation openings of all motors have to be cleaned by using moisture free compressed air.
- Check compressed air tubes for damage.
- Check electric cables for damage.
- Check venting hose and replace if necessary.
- Check flexible steam hose.
- Check drum shaft seals for water leaks on high level.
- Clean connection tube for level switch.
- Make test run on high extraction with loaded machine and check for abnormal noise.
- Clean product hopper.
- Clean and check innerdoor locks.
- Check venting hose and replace if necessary
- Check flexible sleeve (only hygienic) and replace if necessary.
- With open outerdoor(s), check working of brake and locking of frequency convector.

EVERY 2 YEARS

- Check bearing of drive motor and replace if necessary
- Clean and check suspension air cushions and especially the steel rings on top, middle and bottom.

TENSION GATES V-BELTS

IMPORTANT

Tension usually is not critical, but a few simple rules will satisfy most requirements.

1 Best tension for a V-belt drive is the lowest tension at which the belts will not slip under the highest load condition.
2 Check tension frequently during the first day of operation.
3 Check tension periodically thereafter.
4 Too much tension shortens belt and bearing life.
5 Keep belts and pulleys free of any foreign material which may cause slip.
6 If a belt slips, tighten it.

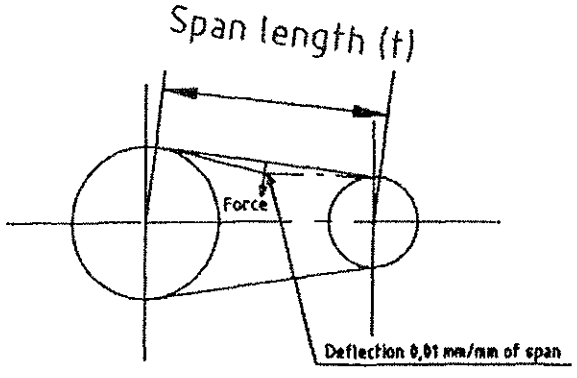
NOTE

For a numerical value for tensioning a drive, see simple instruction below.

HOW TO CHECK THE TENSION IN THIS GATES SUPER HC DRIVE

1. Measure the span length (t).
2. At the centre of the span (t) apply a force with a spring scale (at right angles to the span) large enough to deflect the belt 0,01 mm per mm of span (see sketch).
3. The force should be within the range given below for a properly tensioned drive. (A new set of belts should initially be tensioned to the upper limit of the range).

V-belt cross section	Small pulley dia range	Small pulley RPM range	Speed ratio range	Recommended defl. force kg/belt min
3V /SPZ	67 à 85 mm	1200 à 3600	2.00 à 4.00	0,8 kg 1,6 kg
3VX/xpz	121 à 152 mm	900 à 1800		1,1 kg 2,2 kg
	121 à 152 mm	300 à 900		0,5 kg 1,0 kg
5V /SPB	160 à 229 mm	600 à 1500	2.00 à 4.00	2,2 kg 3,8 kg
5VX/XPB	318 à 406 mm	400 à 900		2,8 kg 5,0 kg
	318 à 406 mm	100 à 200		2,5 kg 5,0 kg
8V /SPC	457 à 569 mm	200 à 700	2.00 à 4.00	5,5 kg 11,0 kg



LUBRICATING

INNER DRUM

All moving parts of the inner drum are covered with a plastic which does not require lubrication.

DRUM BEARINGS, MOTOR BEARINGS

Add every 3 months a small amount of grease. A new machine shall be greased after the first two weeks of operation.
Use a lithium grease of good quality such as :

SHELL	:	ALVANIA R3 ALVANIA R2 RA
KLUBER	:	STABURAGS NBU 12

It is recommended to use always the same type of grease.

COMPRESSED AIR

Lubrication of pneumatic operated parts is done by an air lubricator placed in the air-line.
Never use detergent oil or oil with aggressive additional.
Use oil with a viscosity 2 - 10 Engler such as :

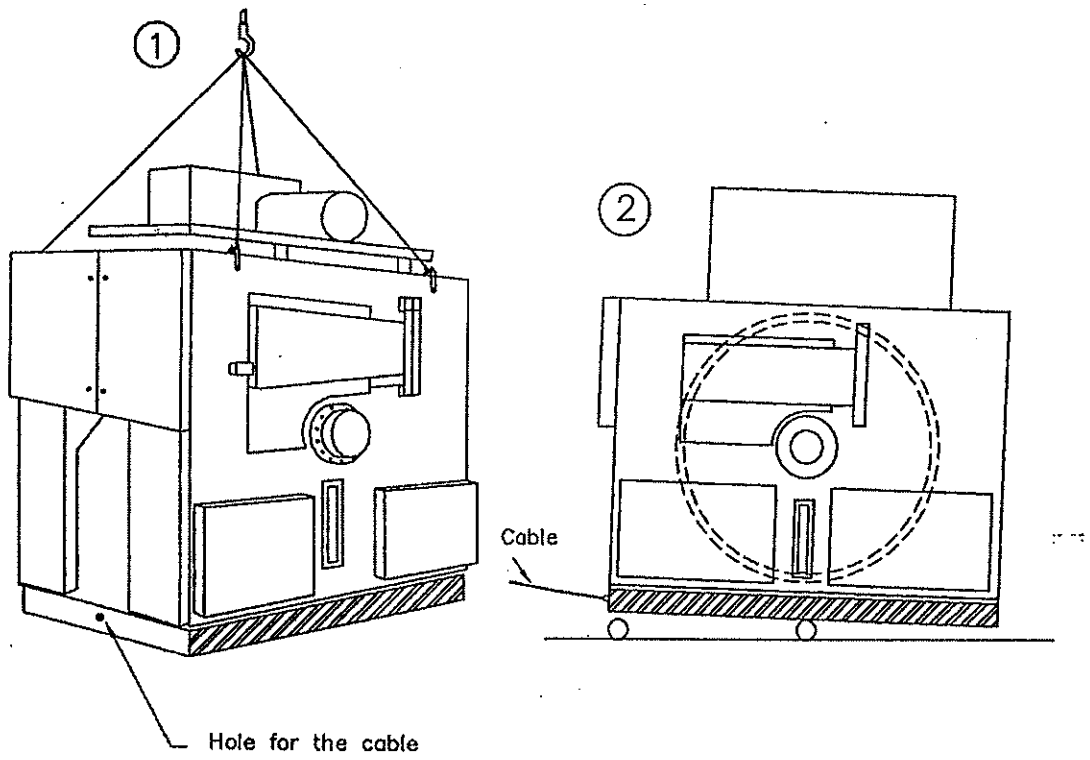
SHELL Tellus 23, Tellus 29 or Tellus R32
Mobiloil DTE OIL LIGHT
Oléoflux
BP : Bartran 32 or Energol HLP 32
Aral Vitnam DE 32
Esso Nuto H 32
Texaco Rando Oil HD 32
Q8 Haydn 32
Fina Hydran 32

The air lubricator has to be regulated so that ± 2 drops of oil are added to the airflow when the drain valve is opened and closed.

LIFTING WASHER-EXTRACTOR WE 2050 SP & HSP

Both front and back plates are provided on the top with 2 holes of 30 mm on which the machine can be lifted. Take care that the 4 transport pieces between front/back plates and underframe are installed, otherwise the whole underframe hangs on the 4 air springs which causes damage to the suspension of the machine.

Weight: WE 2050 SP = 5100 kg
WE 2050 HSP= 5300 kg



INSTALLATION WE 1300-2050-2910 HSP

WARNING

- ALWAYS remove the transport pieces (painted red) BEFORE running
- ALWAYS be sure machine is properly levelled AND grouted as explained in instruction manual BEFORE running
- Failure to follow these instructions could result in DAMAGE to MACHINE AND will VOID machine WARRANTY

On the place where the machine must be installed, the foundation with its anchor holes and drain shall be prepared according to the general lay-out or the particular installation drawing.

Furthermore:

- Put the machine on the foundation and level it properly (use the base-frame as the checking surface). Respect distance between machine and separation wall.
- Pour concrete under the base-frame and into the anchor holes.
- When the concrete is hardened, tighten the anchor-bolts.
- Remove the 4 transport pieces: (painted red).

HYGIENIC EXECUTION

Install the L-beams on both sides of the machine using screws which are fixed on underframe and further up onto the separation wall, the stainless steel panel is installed on top of the 2 L-beams and fixed onto the wall.
Install the flexible sleeve between machine and frame.

CONNECTIONS

1 Drain valve

Use the special clip to install the rubber drain hose dia 250 mm on the bottom of the machine. Slide the rubber seal (480 x 480 mm) over the hose, place the cover plate on the drain pit and take care that the outlet hose is hanging in the opening. Increase air spring pressure fairly high to give enough access for this operation.

2 Water

The max water pressure should not exceed 8 bar (110 psi).
The normal execution has 2 water supplies, which are connected by the customer according to the kinds of water which are available (one or two).
Make sure the 3 water valves are connected because they ensure the flushing-in of the various supplies.
The pipe diameter will be determined according to the size of the machine and the existing water-pressure to provide a fast filling of the machine.
In an installation with 3 kinds of water the machine can be equipped with a 4th water inlet (only on request) which will be connected to the cold hard water supply.
For all possible connection – see sub working principle product hopper – water inlet valves (no 3395).
At the back of the supply box a triple water inlet valve is installed to fill the product-container for the liquid products. This valve is to be connected to high water-pressure. The working principle is based on a reversed siphon action.

3 Steam

The steam pipe shall be provided with a hand operated valve and shall be a diameter in accordance with the capacity of the machine.
It shall be connected to the automatic valve of the machine.
Recommended steam pressure 3 to 7 bar (43 to 100 psi).
Max. steam pressure 9 bar (130 psi).

WARNING

- ALL parts of steam AND air systems MUST not exceed a MAXIMUM working pressure of 9 bar (130 psi)
- ALWAYS shut off ALL air AND steam BEFORE making connections
- NEVER work on hot OR pressurized system
- Failure to follow these instructions could result in SERIOUS INJURY or DEATH

4 Compressed air

Connect the compressed air-line ½" provided with a hand operated valve to the air filter of the machine. Minimum pressure 6 bar (114 psi) – max. 9 bar (130 psi).

5 Electric power

Connect the terminals L1, L2, L3 of the main switch in the control panel to the supply by means of a 3 wire cable and a 3 pole switch with fuses according to the local regulations or a thermal magnetic protection. The section of the conductors and the capacity of the fuses or the thermal magnetic protection is determined in function to the size of the machine (see table technical data).
In view of the long starting time, use fuses with slow action or thermo-magnetic protection.

WARNING

- ALWAYS disconnect power and lockout BEFORE making connections
- ALWAYS connect ground wire to control ground lug
- Failure to follow these instructions could result in SERIOUS INJURY or DEATH

6 Venting

Connect the included venting hose clamps between the machine and the installed venting pipe. Keep the hose as short as possible (± 200 mm).

7 Connection liquid chemical supply

Liquid chemical supply lines can be connected into the product hopper or on the special connections installed on the machine.
Concentrated liquid chemicals can corrode machine components or damage textiles in the machine, check concentration and take necessary action if needed.
D'Hooge accepts absolutely no responsibility whatsoever for damage to its equipment or to any textile in the machine when concentrated chemicals dribble out of the supply tube onto any part of the machine or its contents.
Connect liquid chemical delivery tubes in such a way that chemical dribbling during operation and "after hours dribbling" is impossible. We therefore insist that tubes from any non-flushing type pumped chemical system are installed on a lower level than the connection point onto the machine.
Ensure excessive pressure or leaks in the liquid chemical delivery tubes cannot occur under all circumstances because they can cause injury or illness to all personnel.

WORKING PRINCIPLE PRODUCT HOPPER – WATER INLET VALVES (n° 3395)

The product hopper is divided into 4 compartments and has an inlet pipe (KHW) which goes directly into the machine. As indicated on the drawing, the 3 central compartments are reserved for the supplies 1 and 2 (powder) and the compartment on the right hand side supply N°3. This part is covered to avoid splashing during the washing cycle of the machine.

When the inlet valve kP1 opens, the water flushes supply N°1 into the machine, KP1 closes when the desired level is obtained.
The same happens with KP2 and KP3 but supply N°3 must only enter the machine if compartment 2 is free.

The compartment on the left hand is provided with 3 polypropylene containers which have their own syphon system which ensures the supply of the concentrated washing liquors poured into the containers.

On the rear side of the feeding hopper are fitted 3 water valves which fill the corresponding container with water if the programme card is cut for a particular supply. When the syphon is built-up the entire solution (water + liquor) flows through compartment 1 into the machine. The syphoning stops when the container is empty.

Remark: It is advised to use the stabilised form of sodium bisulfite (a solution of stabilised sodium bisulfite may be obtained by joining 10 % of alcohol to the non stabilized form). Else SO_2 is set free which by oxidation and in the presence of water leads to H_2SO_4. H_2SO_4 is the reason why premature corrosion to the stainless steel parts may occur.

Due to the different qualities of water available in the laundry, the water inlet valves have to be connected in the following way.

a. One quality of water

All the inlet valves are connected to the same line.

b. Cold hard water and cold soft water

P1 + P2 + (CD) : cold soft water
P3 : cold hard water
If a washing cycle with 3 washing dips is required P3 has to be fed with cold soft water and the 4th water inlet valve is needed to feed the rinses with cold hard water.

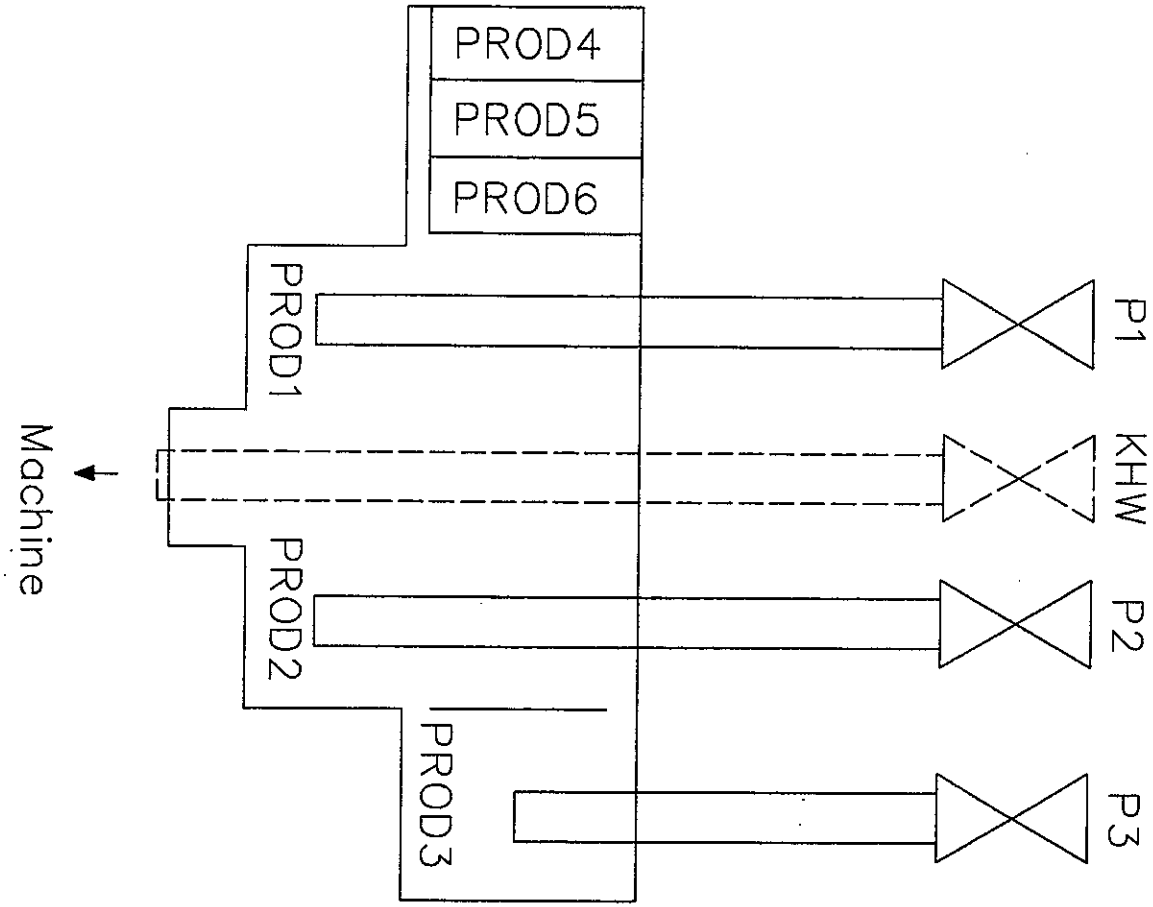
c. Cold water and warm water

P1 + (CD) : cold water
P 2 + P3 : warm water

d. Cold hard water, cold soft water and warm soft water

For washing cycle with only 2 washing dips.
P1 + (CD) : cold soft water
P2 : warm soft water
P3 : cold hard water

For a washing cycle with 3 wash dips.
P1 + (CD) : cold soft water
P2 + P3 : warm soft water
KHW : cold hard water



Machine type: WE1300–WE2050–WE2810					
	NAAM NAME	DATUM DATE	N.V. DHOOGE INDUSTRIES B–9050 GENT Belgium	VERVANGT: REPLACES:	PRODUCTENTRECHTER BAC A PRODUITS SUPPLY CONTAINER WASCHMITTELNBEHALTER
Getek/Drawn	WS	15/03/2001		VERVANGEN DR: REPLACED BY:	PLANNUMMER: 3395
Nagz./Check					

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STARTING-UP WE 1300-2050-2910 HSP (WITH FREQUENCY CONVERTER & PS40)

Before starting-up:

- Disconnect the pipes and blow them out either by water, steam or compressed air in order to remove all dirt and chips.
- Remove clamps and brackets required for transport.
- Blow-up the air-springs with the supplied hose; that is connected to the coupler provided on the machine.

With an empty machine, blow-up the springs gradually and crosswise till the median ring of each spring comes in the centre of the corresponding round hole in the columns.

Adjust the pressure in the air-springs till the front face of the machine is parallel with the side frames and the underside of the front plate parallel with the underframe.

Next gives a mark on the manometers of the air-springs in order to make the right adjustment if this is required.

Finally check the distance between the base-frame and the side plates which should be ± 75 mm.

The difference between the max and min air pressure in the air springs should be not higher than 50 %.

Close the main switch (Q1) on the machine and check voltage between terminals L5 and L6 (should be 220 VAC).

Push the "RESET" button to engage thermal protectors. The outer doors being shut, the innercage will rotate in both directions if the push-button "washing" is pushed and test
program 39 is started on the PS40.

The machine is connected correctly if the pulley on the innercage turns in the direction of the outlet (anti clockwise) when the relay KDIS engages. If the direction is opposite, two wires on the terminals UVW of the frequency converter must be inverted. Don't ever change the rotating direction elsewhere. If the rotating direction of the innercage corresponds with the direction as described above, a final test can be made by starting the innercage on extracting speed at the end of the test cycle. After a cycle the machine can only be unloaded.

At the end of the cycle the frequency convector is switched off and the brake stops the innercage completely. Push the button "START" on the unloading side and the innerdrum will be positioned automatically. The outer door can be opened by pushing the push button "Door".

Before to take the machine in production, a complete washing cycle shall be made with water, steam and a little washing supplies, this to check if water-levels and temperature are in accordance with those which are provided in the washing process.

Therefore proceed as follows:

1 Open hand-operated water, steam and air valves. Switch-on the electric power.
2 Shut inner- and outer doors.
3 Switch the main switch b1 on and push on the push-button "b RESET".
4 Put the washing supplies in the product containers.
5 Push the button "Washing".
6 Select the test program 39 or another preprogrammed cycle and push button "I"on the PS40 to start the cycle.

ADJUSTING OF WATER LEVEL

To adjust the level of a dip, the height may be determined according to the table of dips and the desired dip-ratio (kg linen/litre of water).

e.g. ¼ = 1 kg of linen: 4 litres water.

On a machine with horizontal partition it can be supposed that half of the load is taken out of the dip and that this part of the load took twice its own weight of water. Consequently, to determine the required quantity of water, 1 litre of water may be substracted per kg of linen.

ADJUSTING THE SEAL FUNCTION OF THE SHAFT (ONLY ON WE 1300-2050 HSP)

The drum shaft is made watertight by means of two SIMRIT seals. The compartment between the seals is provided with lubrificated air.

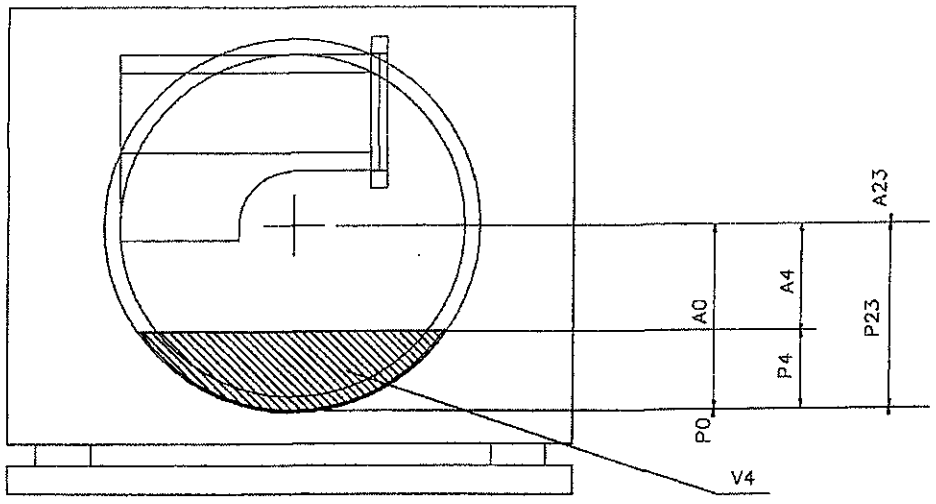
To be certain of a good watertightness, set the pressure of the air regulation that is situated under the electrical box at the left at 0,1 or 0,2 bar.

Life expectance of one SIMRIT seal will be lower by using a too high pressure and leads to an air consumption that is not desired on the other seal.

PEILTABEL
TABLEAU DE NIVEAU
LEVEL CHART
NIVEAU TABELLE

WAS-CENTRIFUGE **WE 2050 (H)SP**
LAVEUSE-ESSOREUSE
WASHER-EXTRACTOR
WASCH-SCHLEUDERMASCHINE

Diameter trommel	1525 mm
Diamètre tambour	1525 mm
Diameter cylinder	60" -
Durchmesser Trommel	1525 mm
Lengte trommel	1125 mm
Longueur tambour	1125 mm
Length cylinder	44 3"
Länge Trommel	1125 mm
Diameter ketel	1643 mm
Diamètre Cuve	1643 mm
Diameter tub	64 11/16"
Durchm. Aussenkessel	1643 mm
Lengte ketel	1277 mm
Longueur cube	1277 mm
Length tub	50 9/32"
Länge Aussenkessel	1277 mm
Volume trommel	2050 dm³
Volume tambour	2050 dm³
Capacity cylinder	72.5 cu.ft.
Inhalt Trommel	2050 dm³



mm	Inch	mm	Inch	1	Cu.ft	B.I.G.	U.S.G.
P0 = 0	0	A0 = 821,5	32 11/32	V0 = 0	0	0	0
P1 = 25,4	1"	A1 = 796,1	31 11/32	V1 = 6,40	0,224	1,39	1,68
P2 = 50,8	2"	A2 = 770,7	30 11/32	V2 = 24,70	0,870	5,42	6,51
P3 = 76,2	3"	A3 = 745,3	29 11/32	V3 = 47,58	1,681	10,46	12,57
P4 = 101,6	4"	A4 = 719,9	28 11/32	V4 = 73,21	2,584	16,09	19,33
P5 = 127	5"	A5 = 694,5	27 11/32	V5 = 100,67	3,553	22,13	26,59
P6 = 152,4	6"	A6 = 669,1	26 11/32	V6 = 132,70	4,683	29,15	35,01
P7 = 177,8	7"	A7 = 643,7	25 11/32	V7 = 164,75	5,815	36,20	43,46
P8 = 203,2	8"	A8 = 618,3	24 11/32	V8 = 201,36	7,107	44,25	53,13
P9 = 228,6	9"	A9 = 592,9	23 11/32	V9 = 242,54	8,561	53,32	64,02
P10 = 254	10"	A10 = 567,5	22 11/32	V10 = 266,32	9,691	60,36	72,47
P11 = 279,4	11"	A11 = 542,1	21 11/32	V11 = 320,34	11,307	70,42	84,55
P12 = 304,8	12"	A12 = 516,7	20 11/32	V12 = 366,11	12,922	80,50	96,64
P13 = 330,2	13"	A13 = 491,3	19 11/32	V13 = 411,88	14,538	90,57	108,72
P14 = 355,6	14"	A14 = 465,9	18 11/32	V14 = 463,46	16,153	100,62	120,81
P15 = 381	15"	A15 = 440,5	17 11/32	V15 = 505,24	17,834	111,10	133,38
P16 = 406,4	16"	A16 = 415,1	16 11/32	V16 = 551,01	19,450	121,16	145,45
P17 = 431,8	17"	A17 = 389,7	15 11/32	V17 = 604,10	21,324	132,83	159,47
P18 = 457,2	18"	A18 = 364,3	14 11/32	V18 = 654,43	23,100	143,40	172,76
P19 = 482,6	19"	A19 = 338,9	13 11/32	V19 = 704,77	24,878	154,97	186,05
P20 = 508	20"	A20 = 313,5	12 11/32	V20 = 755,13	26,655	166,05	199,34
P21 = 533,4	21"	A21 = 288,1	11 11/32	V21 = 805,46	28,431	177,12	212,63
P22 = 558,8	22"	A22 = 262,7	10 11/32	V22 = 855,80	30,209	188,19	225,93
P23 = 584,2	23"	A23 = 237,3	9 11/32	V23 = 915,31	32,310	201,27	241,63
P24 = 609,6	24"	A24 = 211,9	8 11/32	V24 = 965,65	34,086	212,33	254,91
P25 = 635	25"	A25 = 186,5	7 11/32	V25 = 1025,14	36,186	225,43	270,63
P26 = 660,4	26"	A26 = 151,1	6 11/32	V26 = 1075,47	37,936	236,50	283,92
P27 = 685,8	27"	A27 = 135,7	5 11/32	V27 = 1144,13	40,387	251,58	302,03
P28 = 711,2	28"	A28 = 110,3	4 11/32	V28 = 1189,89	42,029	261,66	314,12
P29 = 716,5	28" 7/32	A29 = 105	4 5/32	V29 = 1199,05	42,325	263,68	316,53

OPERATING INSTRUCTIONS WE 2050 HSP (FREQUENCY CONVERTER & PS40)

WARNING

- ALWAYS read and understand operators instructions BEFORE operating machine
- ALL security panels MUST be in place BEFORE operating machine
- NEVER stand in front of door while machine is running
- NEVER open door BEFORE machine has COMPLETELY STOPPED and ALL water has drained from tub
- NEVER start loading or unloading when electrical power or compressed air supply is switched off
- NEVER switch off electric power or compressed air supply during loading or unloading
- When the bell rings: close inner door or keep inner door closed
- Failure to follow these instructions could result in SERIOUS INJURY or DEATH

OPERATING INSTRUCTIONS WE 2050 HSP (FREQUENCY CONVERTER & PS40)

STARTING PROCEDURE

- Open hand operated water and steam valves
- Open compressed air line
- Switch on electric power
- Check air pressure in the 4 air springs
- Check air pressure for shaft seals (± 0, 15 bar)
- Push RESET button

LOADING

- After a cycle the machine can only be loaded after unloading and pushing the button
- "Loading Signal" on the loading side or after switching on main switch Q1.
- With outer door closed bring inner drum in the right position by pushing the button START
- Open outer door by pushing button "DOOR"
- Open inner door and unload/load compartment 1
- Close inner door and make sure the locks are closed and close outer door
- Push button "START" to position compartment 2
- Open outer and inner door and load compartment 2 with the same weight and sort linen
- Close inner and outer door
- Repeat for compartment 3

WASH CYCLE

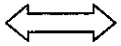
- Push the button "Washing"
- Put the washing supplies in the product hopper
- Select the wash cycle and push "**I**" on the programmer
- The end of the wash cycle is indicated by the orange lamp + "PXX END" on the display

UNLOADING

- With the orange lamp lighted on the unloading side, push the button "START" to bring the drum in the right position.
- Open outer door by pushing button "DOOR"
- Open inner door and unload compartment 1
- Close inner door and make sure the locks are closed and close outer door
- Push button "START" to position compartment 2
- Repeat for compartment 3
- Push the button "Loading Signal" with open outer door after last compartment is loaded
- Close inner and outer door

STOPPING PROCEDURE

- Switch off electric power
- Close compressed air line
- Close steam and water valves

	Handbediening	Manuel	Manual	Handbedienung
	Automaat	Automate	Formula	Automat
	Op – Neer	Monter – Descendre	Up – Down	Heben – Senken
	Op	Monter	Up	Heben
	Neer	Descendre	Down	Senken
	Instellen	Virer	Inch	Einstellen
	Wassen	Laver	Wash	Wasch
	Deur	Porte	Door	Tür
	Signaal laden – lossen	Signal charger – décharger	Signal loading – unloading	Signal Laden - Entladen
	Reset	Reset	Reset	Reset

	Spanning	Tension	Tension	Spannung
	Koud hard water	Eau dure froide	Hard cold water	Hartes kaltes Wasser
	Koud zacht water	Eau douce froide	Soft cold water	Weiches kaltes Wasser
	Warm zacht water	Eau douce chaude	Soft warm water	Weiches warmes Wasser
	Verwarming	Chauffage	Heating	Beheizung
	Doorlopende spoeling	Rinçage continu	Cool-down	Überlauf
	Centrifugeren	Essorage	Extraction	Schleudern
	Uitlaat	Vidange	Drain	Ablass
	Wol	Laine	Wool	Wolle
	Afzuiging	Aspiration	Exhaust	Absaugung

	Pomp	Pompe	Pump	Pumpe
START	Start positioneren binnentrommel	Démarrer positionnement tambour	Start positioning inner drum	Planfahren Innentrommel
	Deur openen (automatische deur)	Ouvrir la porte (porte automatique)	Open the door (automatic door)	Öffnen Tür (automatische Tür)
	Kippen voor lossen	Basculer pour décharger	Tilting for unloading	Kippen für Entladen
	Kippen voor laden	Basculer pour charger	Tilting for loading	Kippen für Laden
	Horizontale positie	Position horizontale	Horizontal position	Waagerechte Position
	Deur sluiten (automatische deur)	Fermer la porte (porte automatique)	Closing door (automatic door)	Tür schließen (automatische Tür)
	Einde cyclus	Fin de cycle	End of cycle	Ende Zyklus
	Laden-lossen/wassen	Charger-décharger/laver	Load-Unload/Washing	Laden-Entladen/ Waschen

MICROPROCESSOR PS40

Before to starting-up, the instructions in the PS40 manual have to be followed carefully as described on the following pages.

"Pre Programming" for the above mentioned machines

HF
FC (frequency controlled)
no COIN
LECO
No LE.Pct
i1 up to i8
If necessary, more inlets can be selected 'if connections are provided)
Select "Pump" at "Dr1","Dr2","rd1" for above mentioned machines
HEAT

The other parameters can be freely chosen.
The outputs of the PS40 electronic print control the following functions :

L+	= washing left
R+	= washing right
DIS	= drain speed (distribution speed)
SPIN L	= low speed extraction
SPIN H	= high speed extraction
WR	= can be used as additional inlet (ir2
WL	= can be used as additional inlet (ir3)
H	= heating
CD	= cool down inlet
Dr1	= outlet 1
Dr2	= outlet 2 (option)
RD1	= outlet 3 (option)

WE 570 – WE 570 H – WE 900
WE 900 H – WE 1250 - WE 1250 H
WE 980 SP

i1	=	cold soft water
i2	=	cold hard water
i3	=	hot soft water (option)
i4	=	product 2
i5	=	product 1
i6	=	product 3
i7	=	product 4
i8	=	product 5

ONLY FOR WE 1300 (HSP)
WE 2050 (HSP) – WE 2910 (HSP)

i1	=	cold soft water + P1
i2	=	(hot) soft water + P2
i3	=	(hot) soft water + P3
i4	=	
i5	=	cold hard water (option)
i6	=	P4
i7	=	P5
i8	=	P6

Ir1, Ir2 = additional inlets (not connected on standard version)
S1 to S6 = control the soap injection print for additional dosing pump installed outside the machine
S7 tp S12 (option)

Inlet i4 can only be programmed in combination with a temperature (for example 40°C) programmed in the same step.

The D'HOOGE test program, used to run through the complete wash program during testing of the machine is restored under program number 39.

On machines with frequency converter the different speeds are programmed in % :

* at washing 90 % corresponds with normal washing speed
* at extraction 99 % corresponds with max. extraction speed (as indicated on identification tag).

PS40

TABLE OF CONTENTS

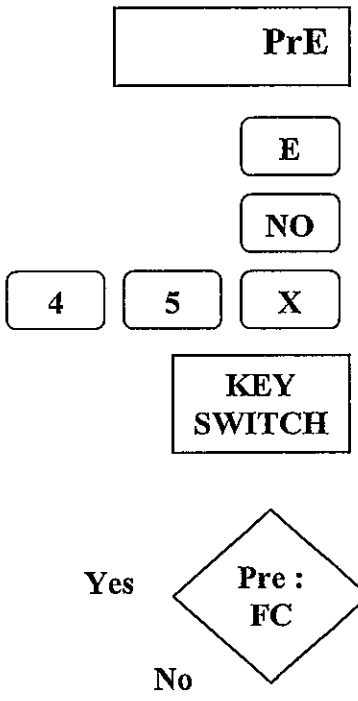
INTRODUCTION

PS40 PROGRAMMER

On machines with an electronic freely programmable programmer PS40, it is possible to program 40 programs of your choice (0 to 39).
Operating the machine, as well as entering the data in order to obtain a washing program , can be done by means of the keyboard on the control panel.

CIRCUIT DIAGRAMS

In this manual you will find several circuit diagrams. Below is an explanation of the symbols used.

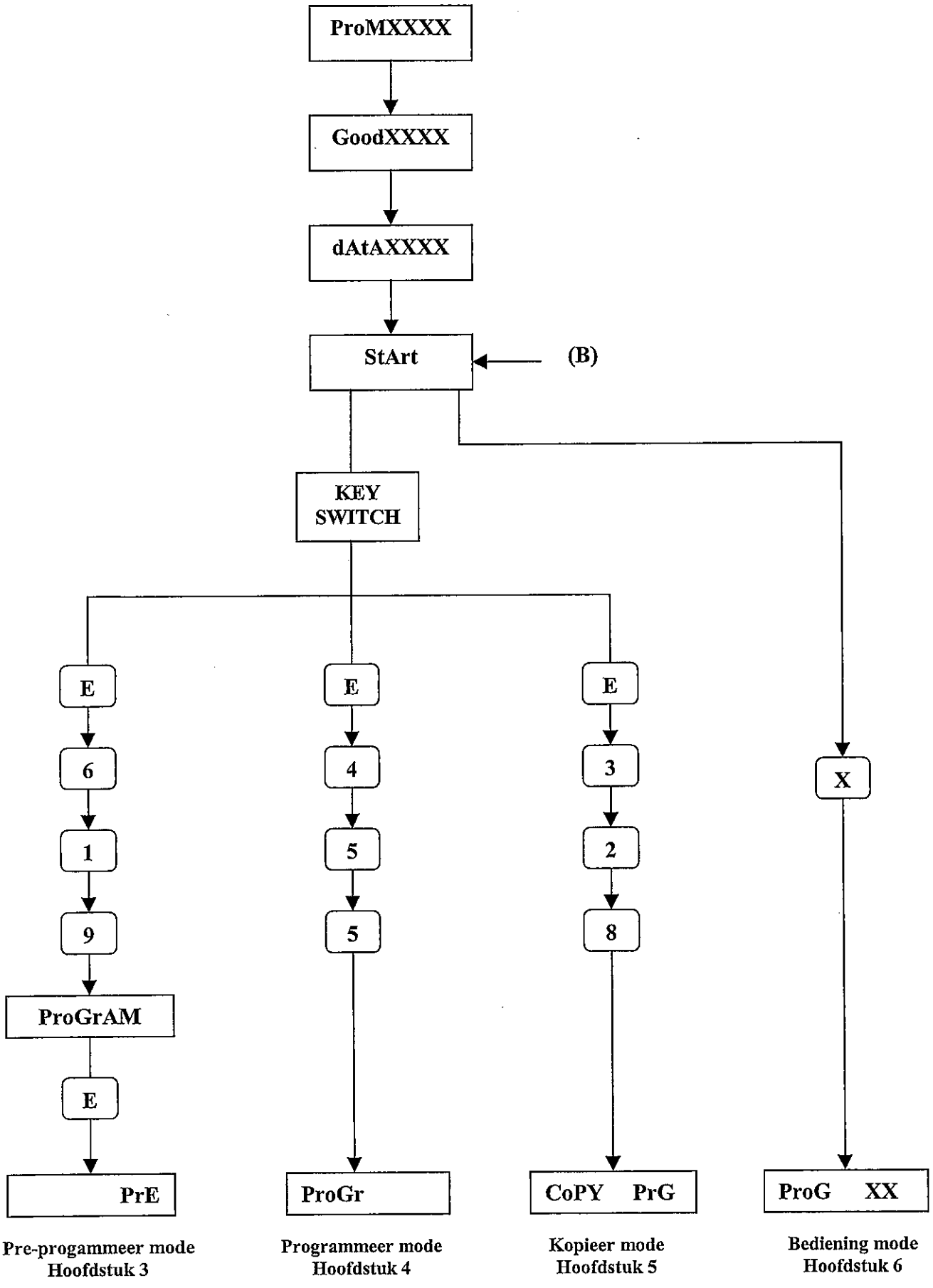


Represents a text that appears on the display.

These symbols with rounded edges represent the pressing of certain keys, to be found on the keyboard.
Ex. Digits, Start, Stop, etc. (X stands for a digit of your choice).

The symbols in rectangles represent mechanical actions to be executed.
Ex. Switch key switch in front

A symbol in a window represents a needed software implementation.
Ex. If a frequency controlled motor was chosen in the Pre-program, a machine with coin switch was selected, or not etc.



Pre-progammeer mode
Hoofdstuk 3

Programmeer mode
Hoofdstuk 4

Kopieer mode
Hoofdstuk 5

Bediening mode
Hoofdstuk 6

DIVISION IN MODES

When a machine is placed under pressure, a so-called "Eprom test" is executed. "***ProM.XXXX***" and "***Good.XXXX***" appear temporarily on the display (XXXX stands for the serial number of the Eprom). Then "***dAtA.XXXX***" appears temporarily. This is the "Checksum" of all data. This value modifies each time, that there are changes in the programmation.
"***StArt***" appears afterwards.
You can now choose out of 8 different modes.

Remark:
When a machine is put under pressure **for the first time**, or when an error occurs in the Ram memory (memory of the washing program), ***"A3"*** will appear. Press ***"ENTER"***.

Press "+" or "-" to select a different mode.

PRE-PROGRAMATION MODE (ProG PrE) (E619)

Here you can initialize the machine to it's own technical caracteristics (f.ex. coin meter or manual machine, number of water inlet valves, machine with or without heating, etc.) as well as certain free programmable options (f.ex. temperature in °C or in °F, temperature readable during the cycle on the display or not, etc.)

To open the "pre-programming mode":

- Switch Key switch in front in "PROG".
- Enter "***E619***" (Press fast one after the other)

"***ProGrAM***" appears on the display. Press "***E***".
"***PrE***" appears on the display.
To modify the "pre-program": see further in chapter 3.

Remark:
- The "pre-program" is programmed by the constructor and should normally not be modified.
- If the key switch in front has not been switched in ***"PROG"*** , after entering ***"E619"*** : "A***0***" appears shortly (blinking) for 10 seconds.

DIVISION IN MODES

PROGRAMATION MODE (ProGEdit) (E455)

You can insert step by step the necessary data to obtain a full washing cycle of your choice.
To proceed to "programmation mode":

- Switch the key switch in front in ***PROG".***
- Enter "***E455***". (Press fast one after the other)

"***ProGr***" appears on the display (blinking).
To program a washing program: see further in chapter 4.

Remark:
If the key switch in front has not been switched in ***"PROG"***, after pressing "***E455***": ***A0***" appears shortly (blinking) during 10 seconds.

COPY MODE (ProGcoPy) (E328)

Existing programs can be programmed to another program number.
This can save you a lot of programmation work for similar programs.
To copy a program: see further in chapter 5.

- Switch the key switch in front in "***PROG***".
- Enter "***E328***". (Press fast one after the other).

"***CoPY PrG***" appears on the display.
To copy a program: see further in chapter 5

Remark:
If the switch key in front has not been placed in "***PROG*** ", after pressing "***E328***": ***"A0"*** appears shortly (blinking) during 10 seconds.

Operating mode
An existing washing program can be started.
To proceed to ' operating mode',enter the washing program number.
"***ProG XX***" appears on the display (*XX* stands for the washing program that has been selected).
To start a program: see further in chapter 6.

DIVISION IN MODES

DOWNLOAD MODE (ProG PC) (E938)

Programs composed with WPS40 software in a PC, can be downloaded in the PS40 or programs from the PS40 can be downloaded in the PC.

PROGRAM LIST (ProGLiSt) (E788)

You can check how many steps and programs are still available (free).
Press "E" and the programs are shown in turns with their respective steps, at the end "FrEEXXX" shows the number of still available steps.
By keeping the "NO" button pressed, you do not proceed automatically and the display stays.
By pressing "E" , the reading process is stopped and the number of free steps is indicated.

ERROR INDICATIONS (LoG) (E605)

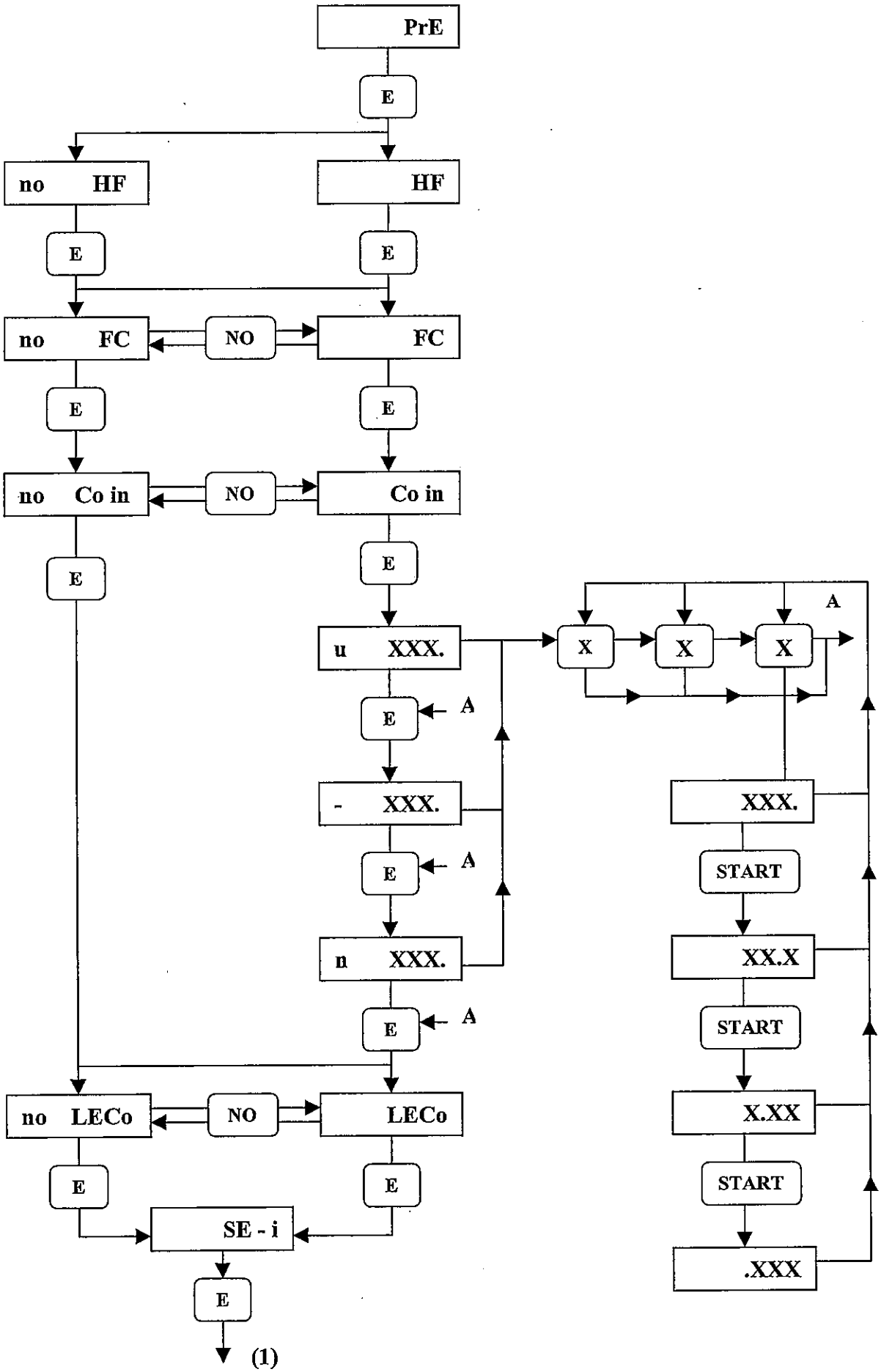
Here you can recall the last ***20 error*** indications. Press "+" or "-" each time in order to retun or proceed to the previous of following error indication. Press "O" to leave the menu.

WORKING HOURS (HourS) (E223)

Press "E" to see the number of working hours of a machine.

TEST MODE (tESt) (E217)

Here you can technically test the machine.


PrE
E
no HF
HF
E
E
no FC
NO
FC
E
E
no Co in
NO
Co in
E
E
u XXX.
A
X
X
X
A
E
- XXX.
A
XXX.
START
E
n XXX.
A
XX.X
START
E
no LECo
NO
LECo
X.XX
START
E
E
.XXX
SE - i
E
(1)

PRE-PROGRAMMING MODE

PREPROGRAMMING

To open the "pre-programming mode": see 2. Division in modes.

In most cases the selection is done by changing the order on the display if necessary by "NO" (Ex. ***"no FC"*** and after pressing "NO": ***"FC"***) and confirming this with ***"E"***.
During pre-programming, it is possible to return step by step by pressing "0" (stop-key).

PrE = Pre-program (Altering the "Pre-program")
Press "***E***".

HF = Machine type HF

FC = Frequency controlled (Frequency controlled motor)

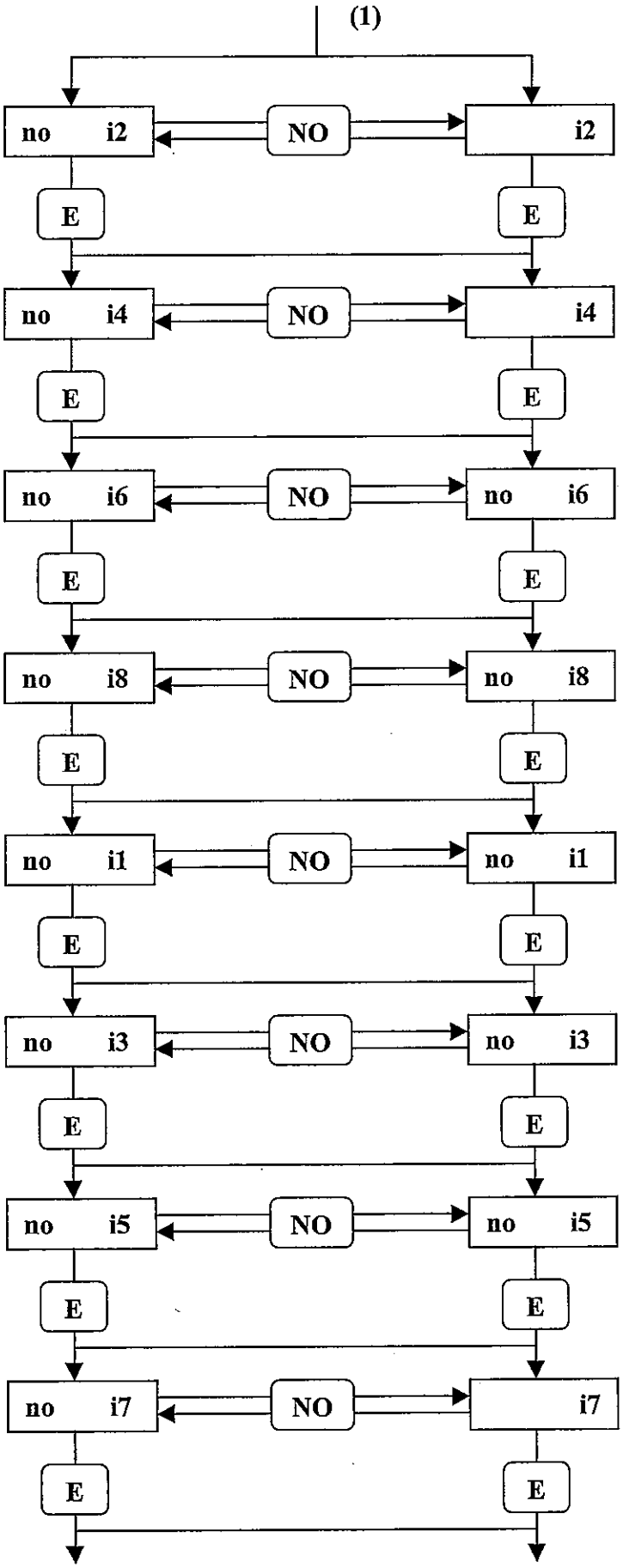
Coin = Machine with coin switch (Not applicable)

LECo = Level control (water level control)
Temporarily stopping the program until the correct water level is reached.

LE.Pct = Level Procent
Here you can enter the water level as a percentage in proportion to the maximum.

SE-i = Select inlet (Selection of the water inlet valves).

d1 = Press "E"
With "NO", select "**d1 Pump**" (always with standard valve)


(1)
no i2
NO
i2
E
E
no i4
NO
i4
E
E
no i6
NO
no i6
E
E
no i8
NO
no i8
E
E
no i1
NO
no i1
E
E
no i3
NO
no i3
E
E
no i5
NO
no i5
E
E
no i7
NO
i7
E
E

PRE-PROGRAMMING CODE

Inlet valve **WE 245 - 570S**
WE 570 - WE 570 H
WE 900 - WE 900 H
WE 1250 - WE 1250 H
WE 980 HSP

i1	Cold soft water	i2	Cold hard water
i3	(Hot soft water)	i4	Product 1
i5	Product 2	i6	Product 3
i7	Product 7	i8	Product 5

Inlet valve **WE 1300 - WE 1300 H**
WE 2050 - WE 2050 H
WE 2910 – WE 2910 H
KANGOEROE

i1	Cold soft water +P1	i2	(Hot) soft water + P2
i3	(Hot) soft water + P3	i4	-
i5	(Cold hard water)	i6	Product 4
i7	Product 5	i8	Product 6

Inlet valve **D'HOOGE JUNIOR**

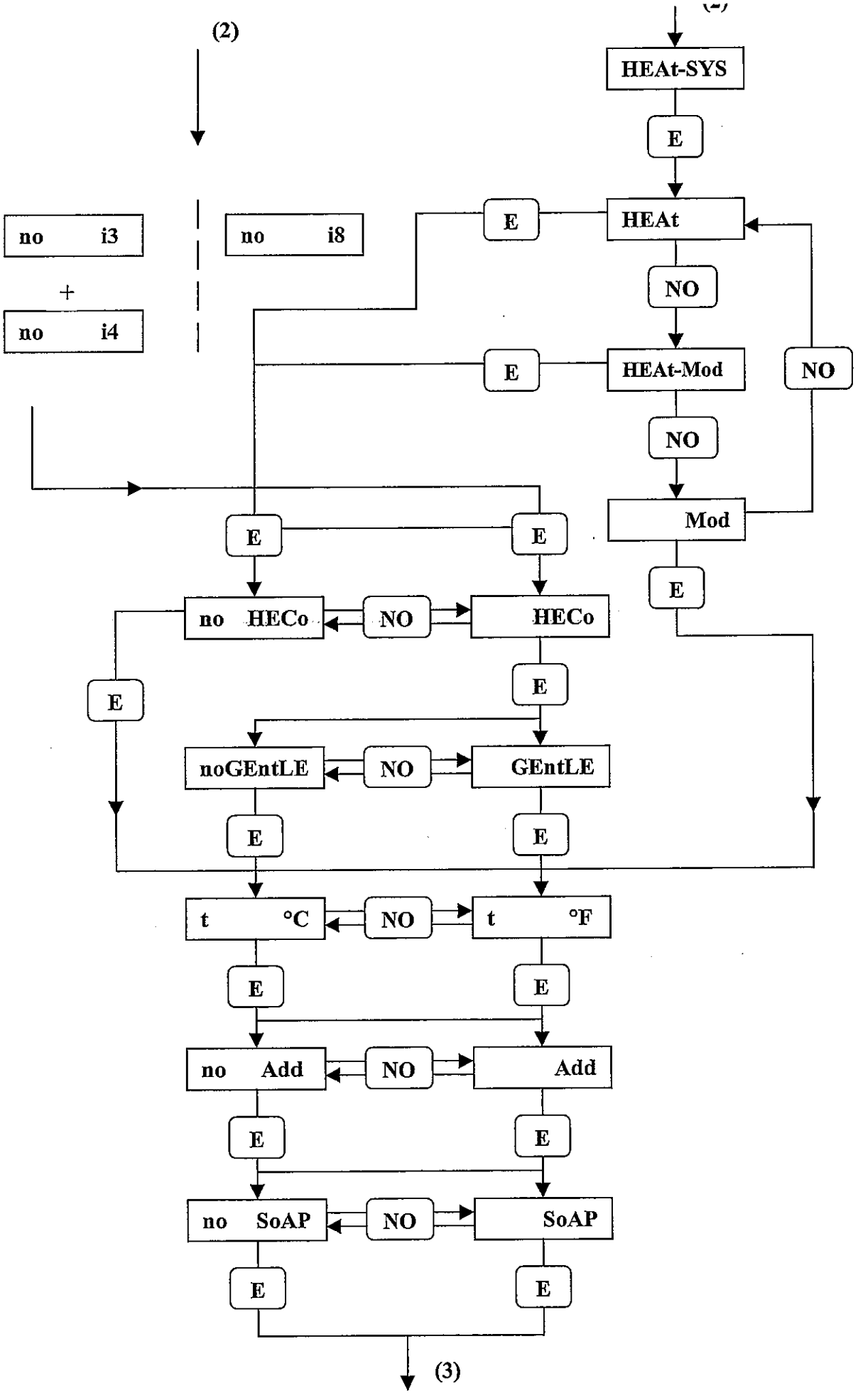
i1	Cold soft water +P1	i2	(Hot) soft water + P2
i3	-	i4	-
i5	Cold hard water	i6	-
i7	(Hot) soft water + P3	i8	Cold hard water + P4

Inlet valve **D'HOOGE SENIOR & D'HOOGE MAJOR**

i1	Cold soft water	i2	Cold hard water
i3	(Hot soft water)	i4	-
i5	Product 1	i6	Product 2
i7	Product 3	i8	Product 4

Additonal entries:

Ir1	Recuperation valve 1
Ir2	Recuperation valve 2
Ir3	Recuperation valve 3 (Not applicable)
CP	Circulation pumpe
d1	Exhaust valve 1
d2	Exhaust valve 2
rd1	Exhaust valve 3
rd2	Exhaust valve 4 (Not applicable)


(2)
HEAt-SYS
E
HEAt
E
no i3
+
no i4
no i8
NO
HEAt-Mod
E
NO
NO
Mod
E
E
E
no HECo
NO
HECo
E
E
noGEntLE
NO
GEntLE
E
E
t °C
NO
t °F
E
E
no Add
NO
Add
E
E
no SoAP
NO
SoAP
E
E
(3)

PRE-PROGRAMMING MODE

HEAt-SYS = Heating System (Heating system)

On machines with hot water supply, the ***modulation technique*** can be used. For this purpose, a ***controlled water mixing*** is applied during water supply, as a result of which the temperature of the bath after loading is perfect in most cases. If this option is not used, a traditional mixing system is used.
In following steps, you have to enter whether this modulation technique will be used or not.

Select from:

HEAt (heating system without modulation)

HEAt-Mod (heating system with modulation)

Mod (no heating system, only modulation)

i3 : WARM WATER i2 : COLD WATER

If no hot water inlet valves are selected (see SE-I) "HEAt" is automatically selected and "HEAt-SYS" will not be displayed.

HECo = Execute heating control (Temperature control)

This means stopping the program temporarily during warm up, until the right temperature is reached.

GentlE = Converting the movement time and the dwell time of the tumbler during temperature control.

If the machine is ***not equipped with a heating system (Mod at HEAt-SYS),*** *the functions* ***HECo*** and ***GentlE*** will not be displayed.

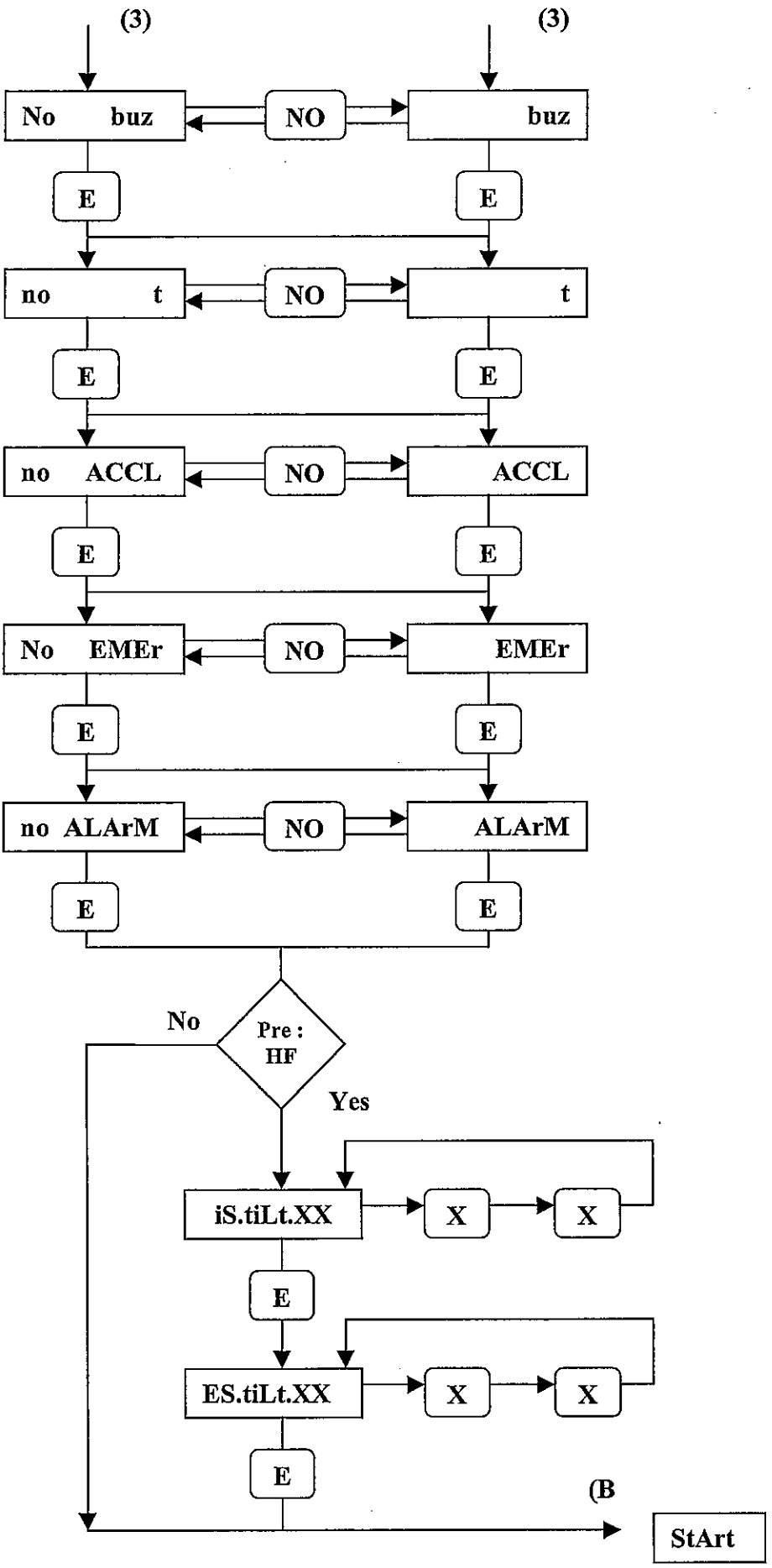
T °C or t°F = temperature selection in °C of °F.

SoAP = Injection pumps for liquid soap
If no liquid soap supplies are provided, continue with Add.

SOAP 01 = soap pump 1
Soap injection with pump 1

On PS40, a maximum of 12 liquid soap supplies can be connected (standard 6 + 6 optional). Select the desired soap supplies from SoAP 01 to SoAP 12 inclusive.

SOAP 12 = soap pump12


(3)
(3)
No buz
NO
buz
E
E
no t
NO
t
E
E
no ACCL
NO
ACCL
E
E
No EMEr
NO
EMEr
E
E
no ALArM
NO
ALArM
E
E
No
Pre :
HF
Yes
iS.tiLt.XX
X
X
E
ES.tiLt.XX
X
X
E
(B
StArt

PRE-PROGRAMMING MODE

Add = Additional programs

These are 3 options (Cool-down, time stop and a soaking program) which can be set later during programming (see chapter 4)

iS.tilt.XX (Intermediate Spin tills)

With "X,X" you can enter the number of tilting breaks that may occur during intermediate spinning (1 to 15) before skipping this spinning cycle.

ES.tilt.XX (Final Spin tills)

With "X,X" you can enter the number of tilting breaks that may occur during intermediate spinning (1 to 15) before skipping this spinning cycle.

HyST = Hysterisis

Here you can set the hysterisis (in °C) on the heating. The smaller the value, the more constant the water temperature will be, but the more frequent the heating element will switch of and on. Enter the hysterisis with "X,X".

Bu = Buzzer (signal) at the end of the program.

t = Temperature

Reading the temperature, visible on the screen

ACCL = Acceleration (to Accelerate)

This will allow to run through the program quickly by means of the "E" key (in the "operation mode").

EMEr = Emergency stop

The "STOP" key functions as emergency switch in the "operating mode".

ALArm

In this way, an external source (horn or light) will be commanded, via outlet ***"SOAP6"***, which will announce f.ex. the end of a program or soaking cycle. In this way the number of soap exits will be reduced from 12 to 11.

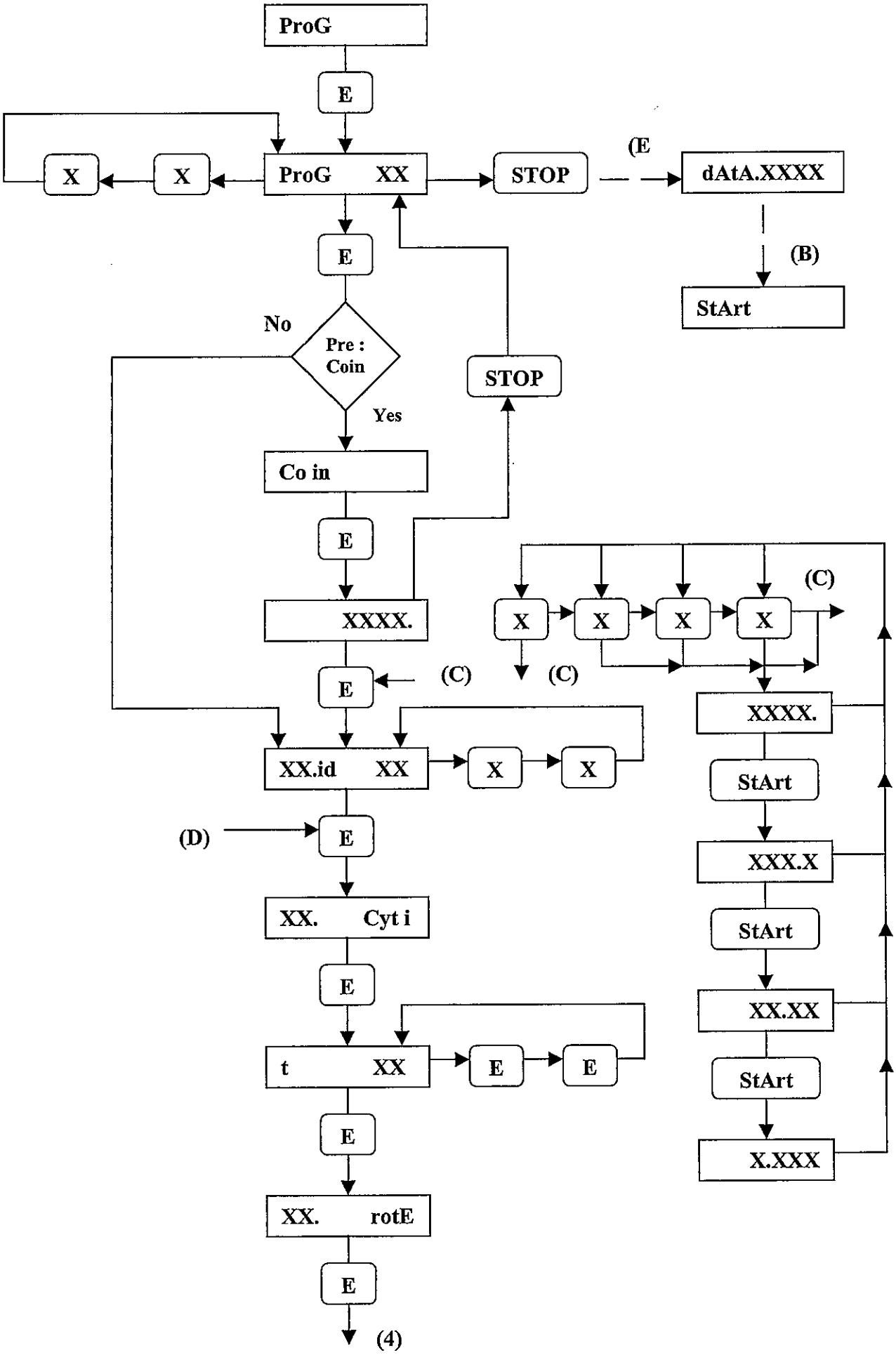
TiHold = time hold

When several machines are connected to one soap supply system, this prevents that more machines are provided with soap at the same time. This in order to prevent wrong dosage.

dEFAul = default

This parameter has no influence yet.

The pre-programming has finished now, "WAIT" appears temporarily. You'll return to ***"StArt"***.


ProG
E
X
X
ProG XX
STOP
(E
dAtA.XXXX
(B)
StArt
E
No
Pre : Coin
Yes
STOP
Co in
E
XXXX.
E
(C)
X
X
X
X
(C)
(C)
XXXX.
StArt
XXX.X
StArt
XX.XX
StArt
X.XXX
XX.id XX
X
X
(D)
E
XX. Cyt i
E
t XX
E
E
E
XX. rotE
E
(4)

PROGRAMMING MODE

PROGRAMMING

To open "programming mode": see 2. Division in modes
The selection can often be done by changing the order on the display if necessary with "NO" (Ex. ***"no HECo"*** and after pressing "NO": ***"HECo"***), and confirming this with "E".

During programming, it is possible to return step by step by pressing ***"STOP"*** (stop-key).

ProG (blinking)= programming

Press "E"

ProG XX = the Program number that has to be programmed

Enter the desired program number with ***"X,X"***.
On the ***program number display***, the program number is displayed. In order to select a program number above 9, the number should be formed with a combination of keys.
Press "ENTER" again.
The following step depends on the selection during "pre-programming"

- With ***"no Coin"*** (without coin switch): change to ***"XX.id.XX"***
- With ***"Coin"*** (with coin switch): change to ***"Coin"***.

XX.id XX = "Program number" and "Program part number"

The first ***XX*** represent the program number entered at ***"ProG"***.
The second ***XX*** represent the " program part number ".

Example:

"***02.id 03***" represents program 2, program part 3.
A program part is a part of a program (pre-washing, main wash cycle, rinsing, etc.) and is ***ended by a water discharge*** in each case. In order to obtain a full wash cycle, several program parts should be entered consecutively (max. 99 per wash cycle).
Enter a program part number with ***"X,X"*** and press ***"E"***.

PROGRAMMING MODE

If during programming, there is insufficient space in the "RAM-memory", the error message "Ram full" will appear.

*XX. **CYt i*** = Cycle time

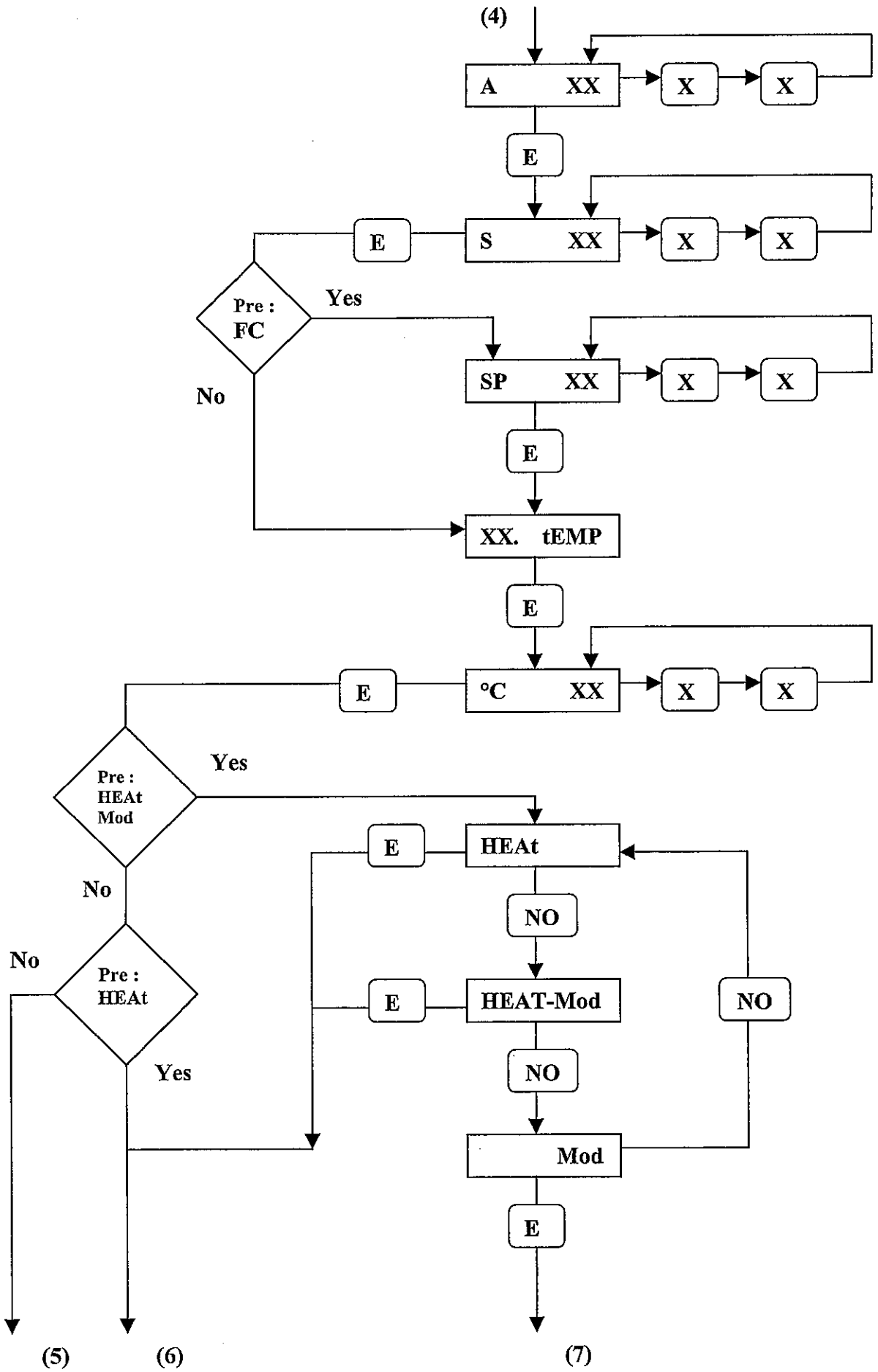
This is the duration of the washing time in this program part (*XX*) (without taken into account the temperature and level control)
From now on ***"XX"*** stands for the program part number that has been entered.
Press "E".

t XX = Time (washing time in minutes and seconds)

Enter the time with "***X,X***" (0 to 60 minutes) and press ***"E"***
If "O" is entered, the program will proceed with "***SPin***" (or "***no SPin***")

*XX. **rotE*** = Rotation (Dwell-and washing movement times)

Press "E"


(4)
A XX
X
X
E
E
S XX
X
X
Pre : FC
Yes
No
SP XX
X
X
E
XX. tEMP
E
E
°C XX
X
X
Pre : HEAt Mod
Yes
No
E
HEAt
NO
No
Pre : HEAt
E
HEAT-Mod
NO
NO
Yes
Mod
E
(5)
(6)
(7)

PROGRAMMING MODE

A XX = Action time (Movement time)

Enter the movement time *"X,X"* (0 to 60 seconds).
When the motor is frequency controlled, a digit will appear after the decimal point and the time can be set accurate to 0.1sec.
When *"0"* seconds (cycle without movement of the drum), the following step *(" S XX")* is skipped.
Press "E"

S XX = Stop time (Dwell time)

Enter the dwell time with *"X,X"* (1 to 60 seconds).
When the motor is frequency controlled, a digit will appear after the decimal point and the time can be set accurate to 0.1 sec. (Minimum 0.5 sec).
Press "E".
The next step depends on the selection during the "pre-programming".

- Without *"FC"* (frequency controlled motor): change to *"XX. tEMP"*
- With *"FC"* (frequency controlled motor): change to *"SP XX"*

SP XX = Speed

Enter the revolutions per minute of the washing movement with "*X,X*" (10 to 50 revs/min)
Press *"E"*.

XX. tEMP = Temperature (Temperature of the bath)
Press "E"

°C XX = Temperature (Or "*°F XX*" *°C* or *°F* according to your selection in Pre-Programming)
Enter with *"X,X"* the temperature (***maximum 95°C***) and press "E";

In case of cold bath, enter "0". Proceed with "XX.SE-i" immediately.

The following step depends on the selection made in "pre-program" during "*HEAt-SYS*".

➔ If "*HEAt-Mod*" was selected, you can now make a selection with *"NO"* switched off:

PROGRAMMING MODE

HEAt (heating without modulation) transition to ***"HECo"*** or ***"XX.SE-i."***

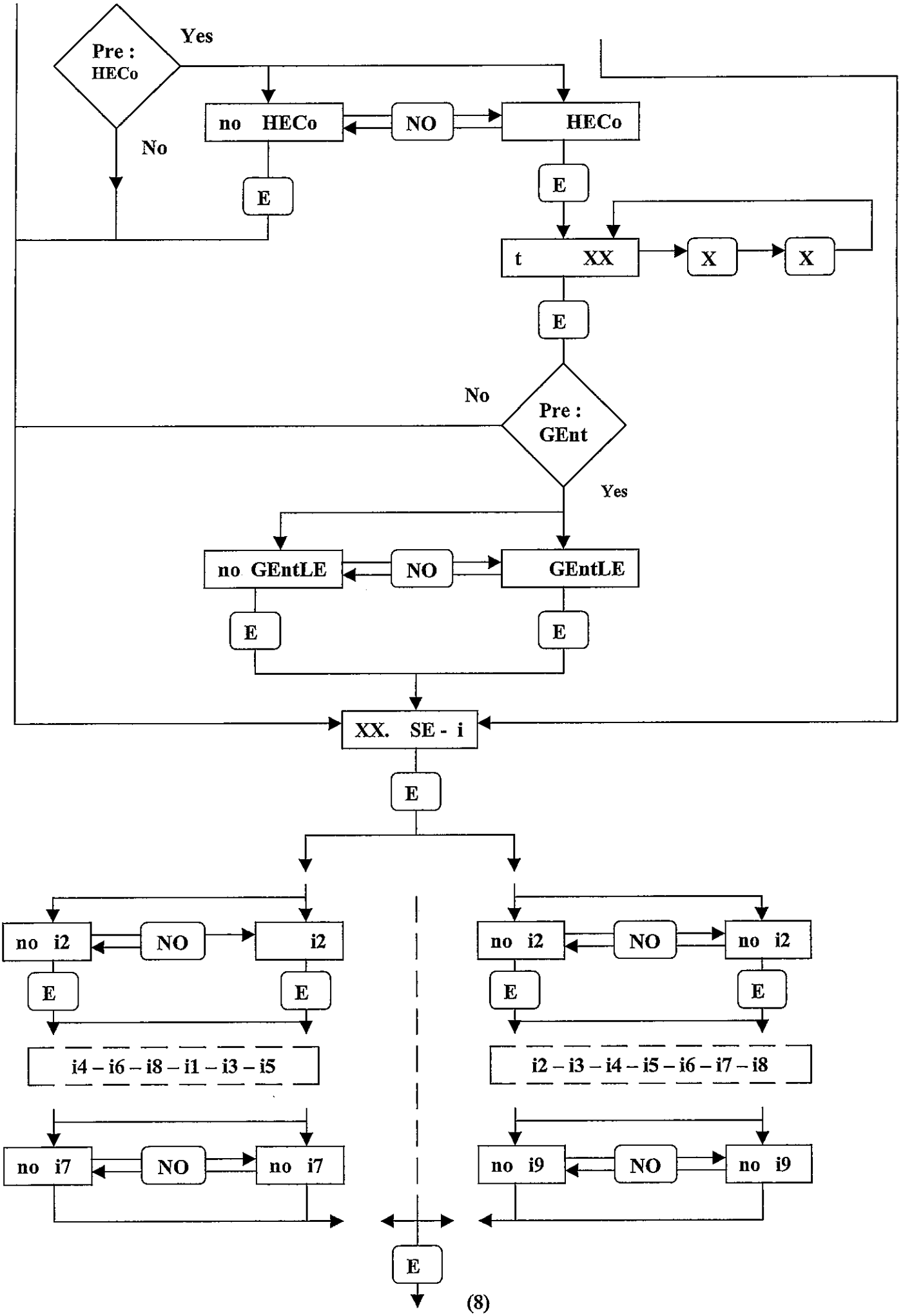
HEAt-Mod (heating with supplementary heating) transition to ***"HECo"*** or ***"XX.SE-i"***.

Mod (modulation without supplementary heating) transition to ***"XX.SE-i"***

Press ***"E"***

→ If ***"HEAt"*** was selected, there will be an immediate transition to ***"HECo"*** or ***"XX.SE-i"***.

→ If ***"Mod"*** was selected, there will be an immediate transition to ***"XX.SE-i"***.


Pre : HECo
Yes
No
no HECo
NO
HECo
E
E
t XX
X
X
E
No
Pre : GEnt
Yes
no GEntLE
NO
GEntLE
E
E
XX. SE - i
E
no i2
NO
i2
E
E
i4 – i6 – i8 – i1 – i3 – i5
no i7
NO
no i7
no i2
NO
no i2
E
E
i2 – i3 – i4 – i5 – i6 – i7 – i8
no i9
NO
no i9
E

PROGRAMMING MODE

HECo = Heating control (Temperature control)

If no heating control is wanted, select ***"no HECo"*** and press "E"
If heating control is desired, select ***"HECo"*** and press "E"

If "no HECo" is selected, there will be a transfer to "XX.SE-I"

t XX = Time (Duration of the temperature control)

With ***"X,X"*** enter the time at which the control should be performed (value between 0 and the washing time entered at ***"XX.Cyti"***) and press ***"E"***.

t = o : the heating starts at the beginning of the cycle.

GentlE = converting the movement and dwell time (set at *"A XX" and "*S XX*")* during temperature control.

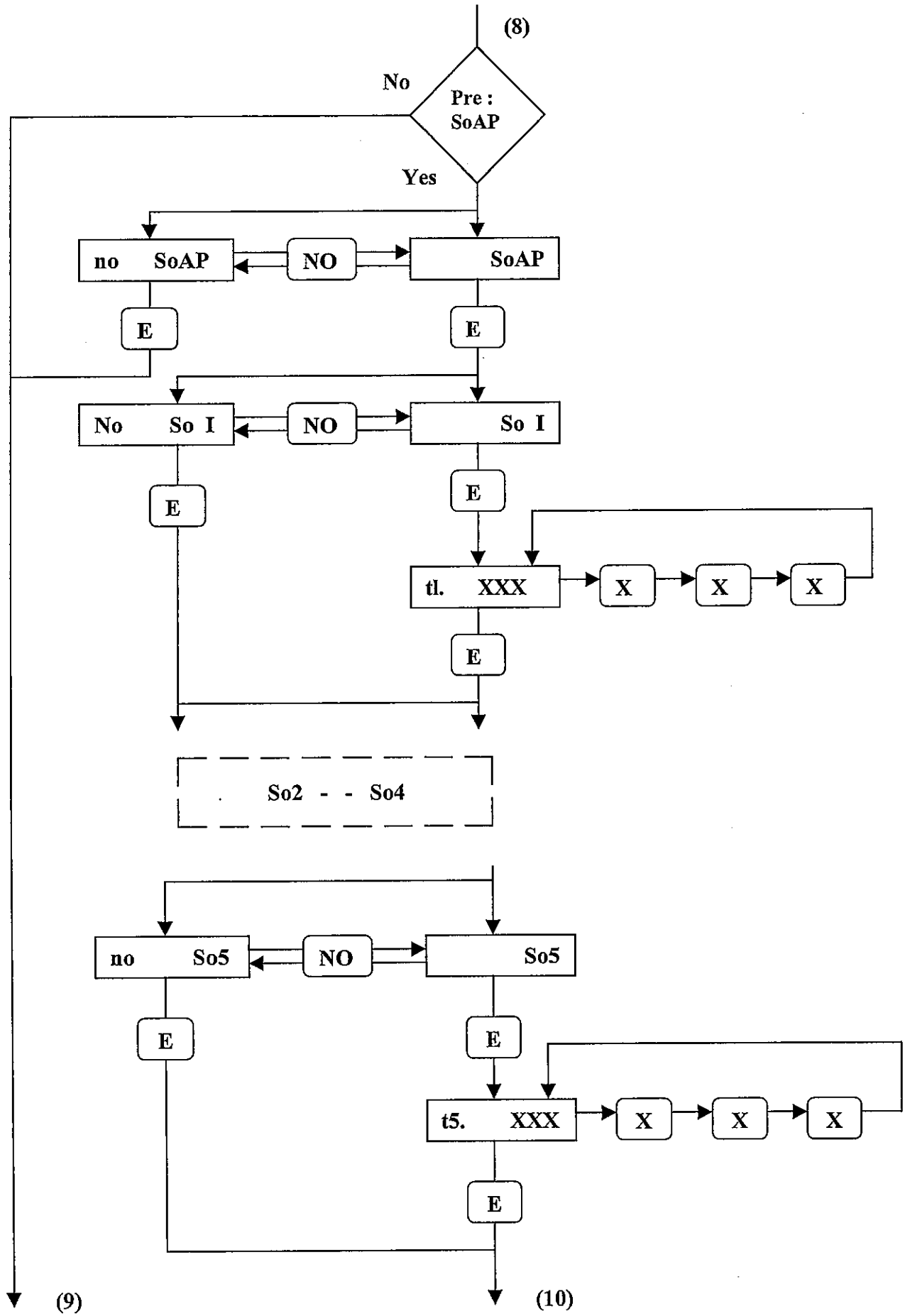
XX. SE-i = Select inlet (Select water inlet-valves)
Press "E"

i2 = Inlet 2 (Inlet valve 2) or ***i1*** = Inlet 1 (Inlet valve 1)

With "NO" select if an inlet valve should be selected or not.
Press "E" to continue with the next inlet valve.
To save space, not all valves have been drawn. The action is the same for each one of them. You can find the function of the valves in chapter 3.

If, by mistake, you selected the wrong inlet valve, and the temperature should rise above the "°C XX" set, cold water will automatically flow through inlet valve "i2" or "i7"for safety.

The following step depends on the selection made at "pre-program"
- Without "SoAP " (liquid soap supply): transfer to ***XX. SE-L***".
- With "SoAP" (liquid soap supply): transfer to "***SoAP***" (or "***no SoAP"***).


(8)
No
Pre :
SoAP
Yes
no SoAP
NO
SoAP
E
E
No So I
NO
So I
E
E
tl. XXX
X
X
X
E
So2 - - So4
no So5
NO
So5
E
E
t5. XXX
X
X
X
E
(9)
(10)

PROGRAMMING MODE

SoAP = Liquid soap supply

If no soap supply is desired, select "***no SoAP***" and press "E". (Transfer to "***XX. SE-L***")
If soap injection is desired, select ***"SoAP"*** and press "E".

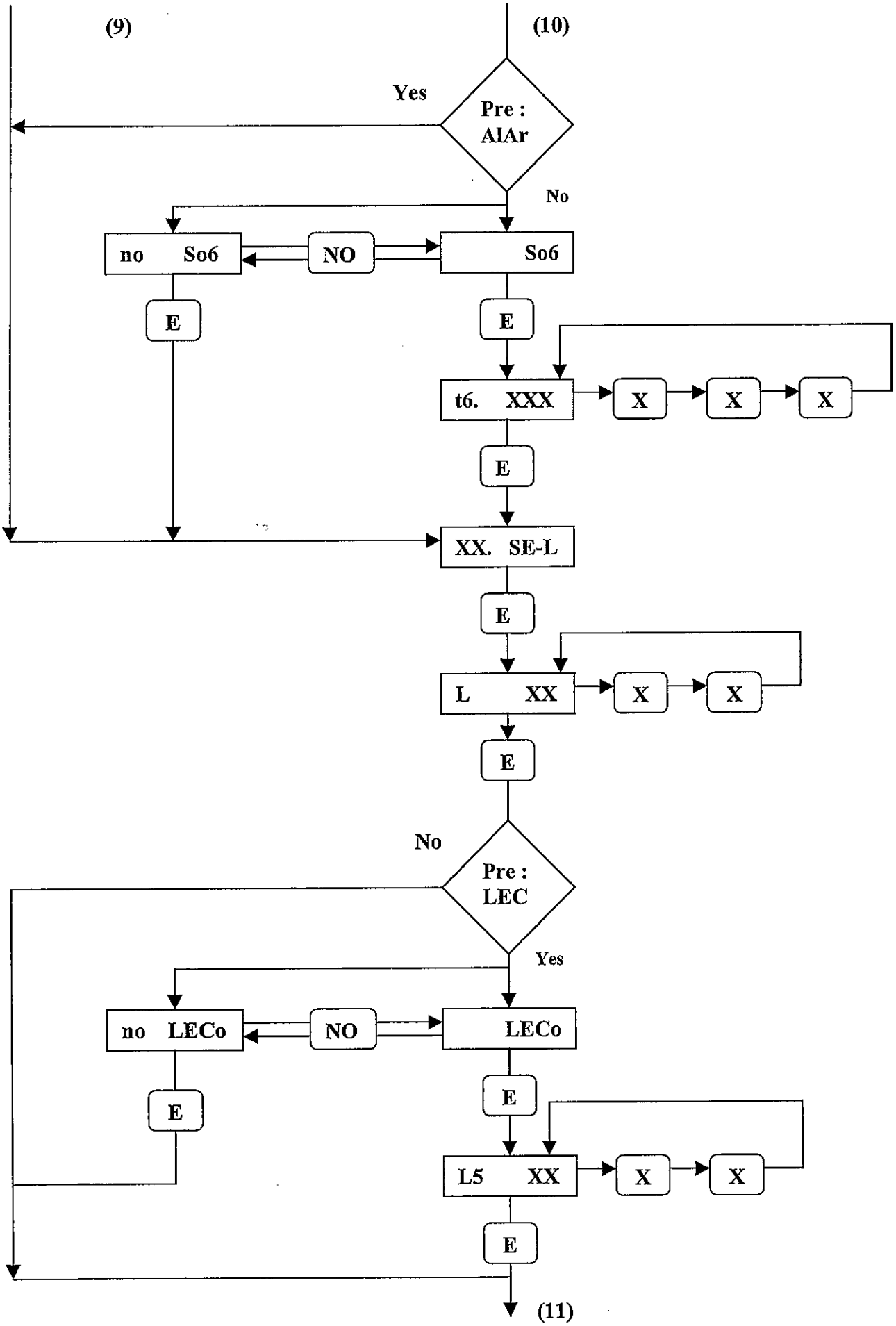
SoI = Liquid soap injection 1

Use "NO" to choose whether a soap inlet pump should be selected or not.
Then press "E".

tl. XXX = Time 1 (Duration of soap injection 1)

Enter the duration with "***X,X,X"*** (maximum 999 seconds)
Press "E" to proceed to the next soap injection.

Depending on the selection in "pre-program", the soap inlets can be programmed one after the other.


(9)
(10)
Yes
Pre :
AlAr
No
no So6
NO
So6
E
E
t6. XXX
X
X
X
E
XX. SE-L
E
L XX
X
X
E
No
Pre :
LEC
Yes
no LECo
NO
LECo
E
E
L5 XX
X
X
E
(11)

PROGRAMMING MODE

If in the Pre-program "AlArm" was selected, "So6" will not be displayed and you will proceed with "XX.SE-L" **immediately.**

Press "E".

XX. SE-L = Select level (Select water level)

Press "E"

L XX = Level (Water level)

Use ***"X,X"*** to enter the water level (5 to 50) (experimental) and press ***"E"***

The next step depends on the selection made during "pre-programing".
- Without "***LECo***" (level control): transfer to "***Add***" (or "***no Add***").
- With "***LECo"*** (level control): transfer to "***LECo***" (or "***no LECo***").

When "O°" is entered at "XX.tEMP", you can enter a level between 0 and 50.

➔ ***Overflow (extremely soil linnen)***
- ***Enter "O°" (or "°F") at "XX.tEMP".***
- ***select "no HECo" and enter the level "00" at "L XX".***

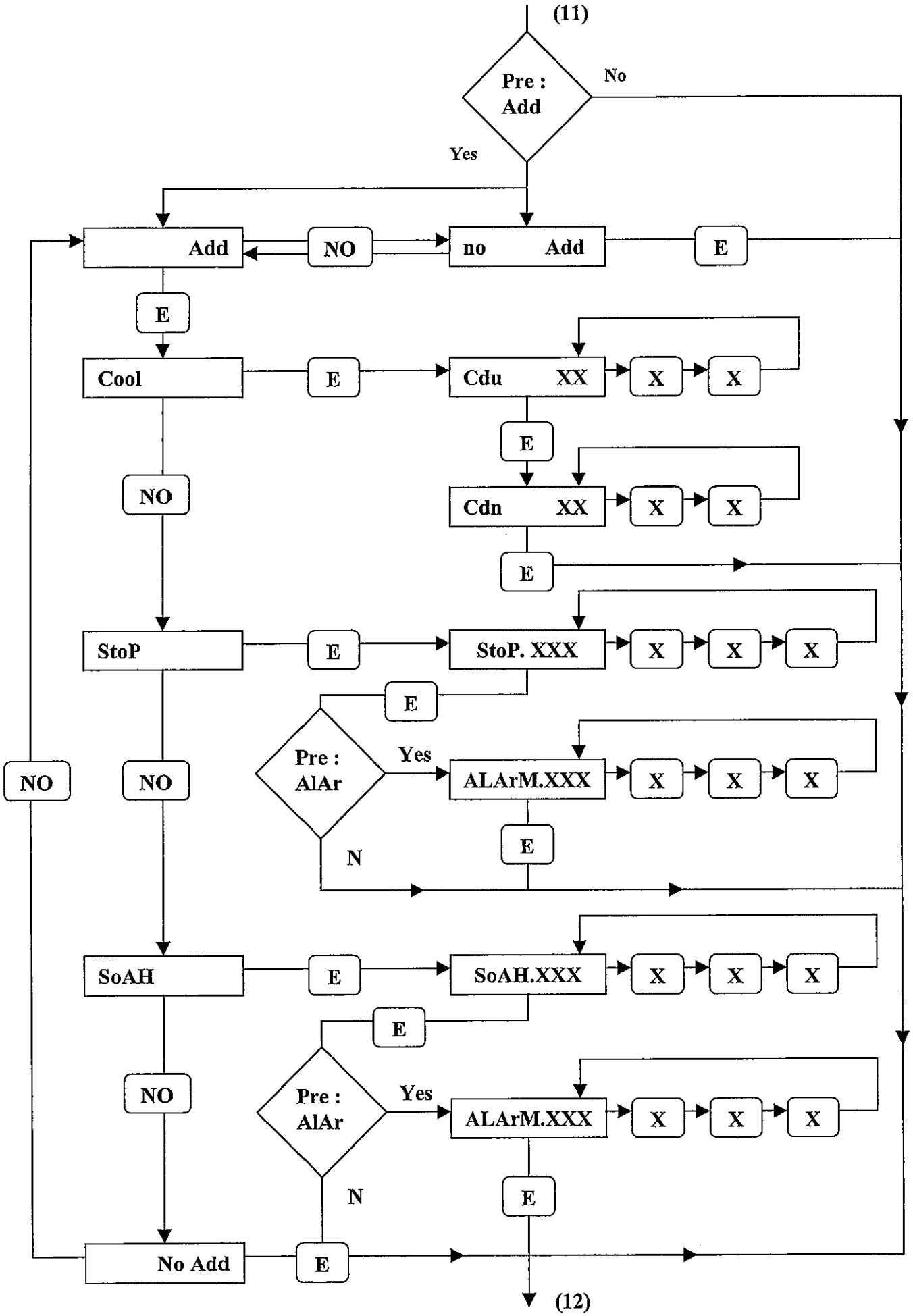
During the complete washing time, water will be supplied and discharged via the overflow.

LECo = Level control (Level control)

If no level control is desired, select ***"no LECo"*** and press ***"E"***
If level control is desired, select ***"LECo"*** and press ***"E"***

LS XX = Level stop (level control)

With "X,X" enter the level where the program time should stop (automatically limited) till the set value is reached at ***"L XX".***
When this level is reached, the programmer continues and the bath is filled till the level set at ***"L.XX"***. Press ***"E".***


(11)
Pre : Add
No
Yes
Add
NO
no Add
E
E
Cool
E
Cdu XX
X
X
E
NO
Cdn XX
X
X
E
StoP
E
StoP. XXX
X
X
X
E
Pre : AlAr
Yes
ALArM.XXX
X
X
X
E
N
NO
NO
SoAH
E
SoAH.XXX
X
X
X
E
NO
Pre : AlAr
Yes
ALArM.XXX
X
X
X
E
N
No Add
E
(12)

PROGRAMMING MODE

The next step depends on the selection during "pre-programming".
- Without *"Add"* (help program): transition to "*SPin*" (or "*no SPin*").
- With *"Add"* (help program): transition to "*Add*" (or "*no Add*").

Add = Additional program (Program extension)

When no program extension is desired, select "*no Add*" and press "*E*" (transition to "*Spin*").
If a program extension is desired, select "*Add*" and press "*E*".
With "*NO*" switched off select: "*Cool*", "*StoP*", "*STOP.tiME*", "*SoAH*", "*SoAH.tiME*" or once more "*no Add*" and press "E" to confirm your selection.

→ *XX.Cool* = Cool-down

Cdu\ XX = degree of temperature drop to the highest cool-down temperature
Enter the degrees of temperature drop at "*X,X*" (1 to 99°/minute) and press "*E*".

Cdu XX = highest cool-down temperature
With "*X,X*" enter the temperature (30 to 85) and press "*E*".

Cdn\ XX = Degree of temperature drop to the lowest cool-down temperature.
With "*X,X*" enter the degree of temperature drop (1 to 99°/minute) and press "*E*".

CDn XX = Lowest cool-down temperature
With *"X,X"* enter the temperature (30 to 85 and automatically limited to the value set at *"Cdu XX"*) and press *"E".*

→ *StoP* = Stop
In the "operating mode", the program will stop here, so f.ex. extra soap could be added manually (the water remains in the bath). See operating mode:: "Programmed stop".
A "stop time" up to *999* minutes can be entered. After the stop time has expired, the program will **automatically** restart.

StoP.XXX
With "*X,X,X,*" enter the stop time *(0 to 999 minute*) and press "E".

If "0" was entered, the program will be stopped until "START"is pressed.

PROGRAMMING MODE

➔ ***SoAH*** = Soak

In the "operating mode", the program will stop here, the level will be brought to "25" and every 3 minutes, a left-right movement will be performed (temperature will remain constant) See operating mode: "soak".
You can enter a "soaking time" from up to ***999*** minutes. After this soaking time is up, the program will ***automatically*** restart.

SoAH.XXX

With "*X,X,X*" you can enter the soaking time (***0 to 999 minutes***) and press "*E*".

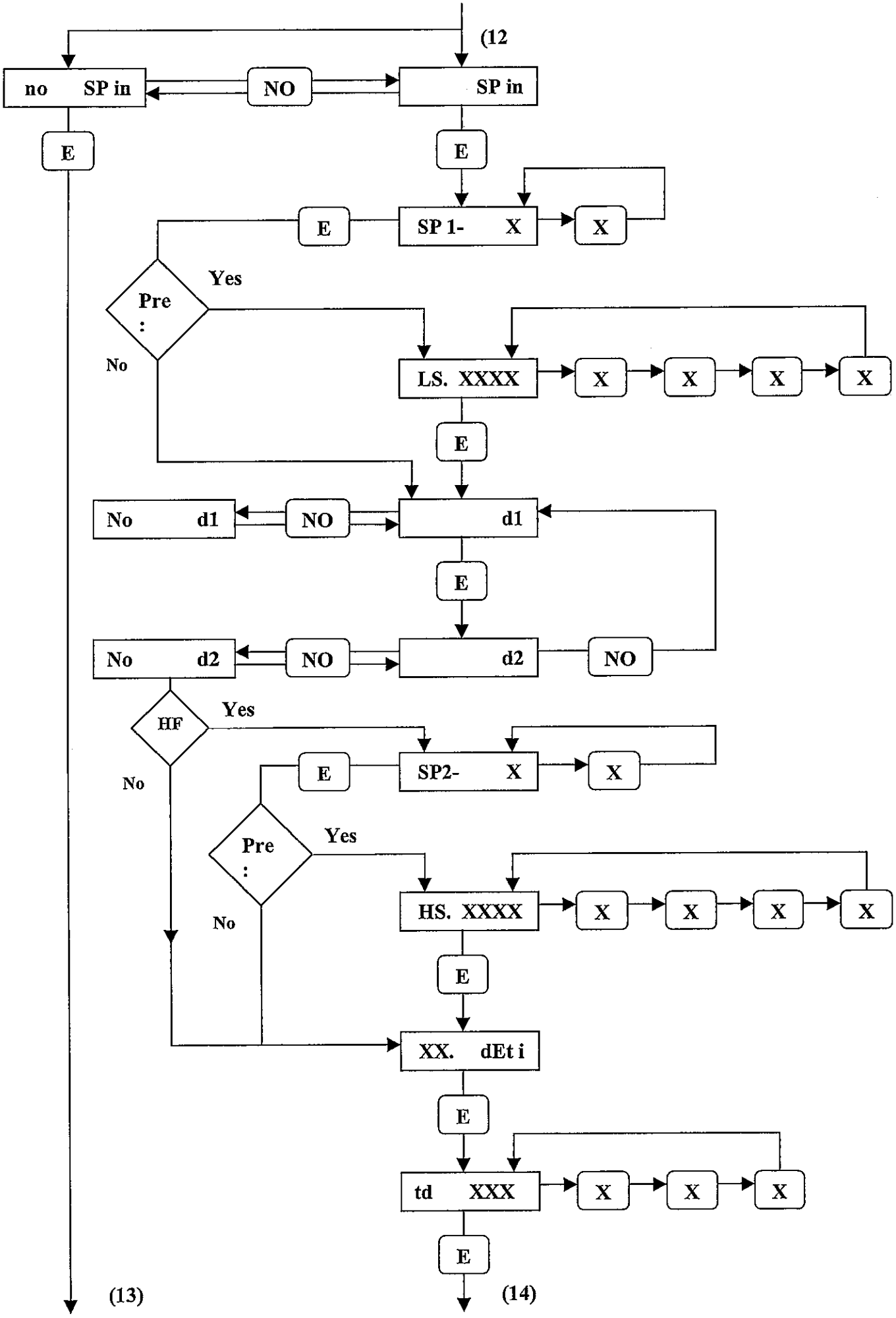
If "0" has been entered, the program will be stopped until "START" is pressed.

ALArm.XXX

In the beginning of this soaking time, you can activate the alarm signal.
With "*X,X,X*" enter the time (0 to 250 sec.) during which you want to here the signal.
This option can only be displayed if the Pre-program is selected (see ***"ALARM").***

If "999" was entered, the alarm will be active during the complete soaking time!

➔ ***no Add*** = No Additional (no program extension)


(12
no SP in
NO
SP in
E
E
E
SP 1- X
X
Yes
Pre :
No
LS. XXXX
X
X
X
X
E
No d1
NO
d1
E
No d2
NO
d2
NO
HF
Yes
No
E
SP2- X
X
Pre :
Yes
No
HS. XXXX
X
X
X
X
E
XX. dEt i
E
td XXX
X
X
X
E
(13)
(14)

PROGRAMMING MODE

SPin = Spinning

If spinning is desired, select "***Spin***" and press "***E***".
If no spinning is desired, select "***no Spin***" and press "***E***".

SPiG = Duration of spinning

With "***X***" enter the duration of the spinning ***(1 to 15 minutes)*** and press "***E***"

The next step depends upon the selection during "pre-program".
- Without "FC" (frequency controlled motor): change to "***dl***".
- With "FC" (frequency controlled motor): change to "***LS.XXXX***".

SPXXX = Number of revolutions of spinning (max 100%) and press ***"E"***

dl = Drain 1 (drain valve 1)

Select "***d1***", **"d2", "rd1"**, with "No" and confirm with "***E***".

PROGRAMMING MODE

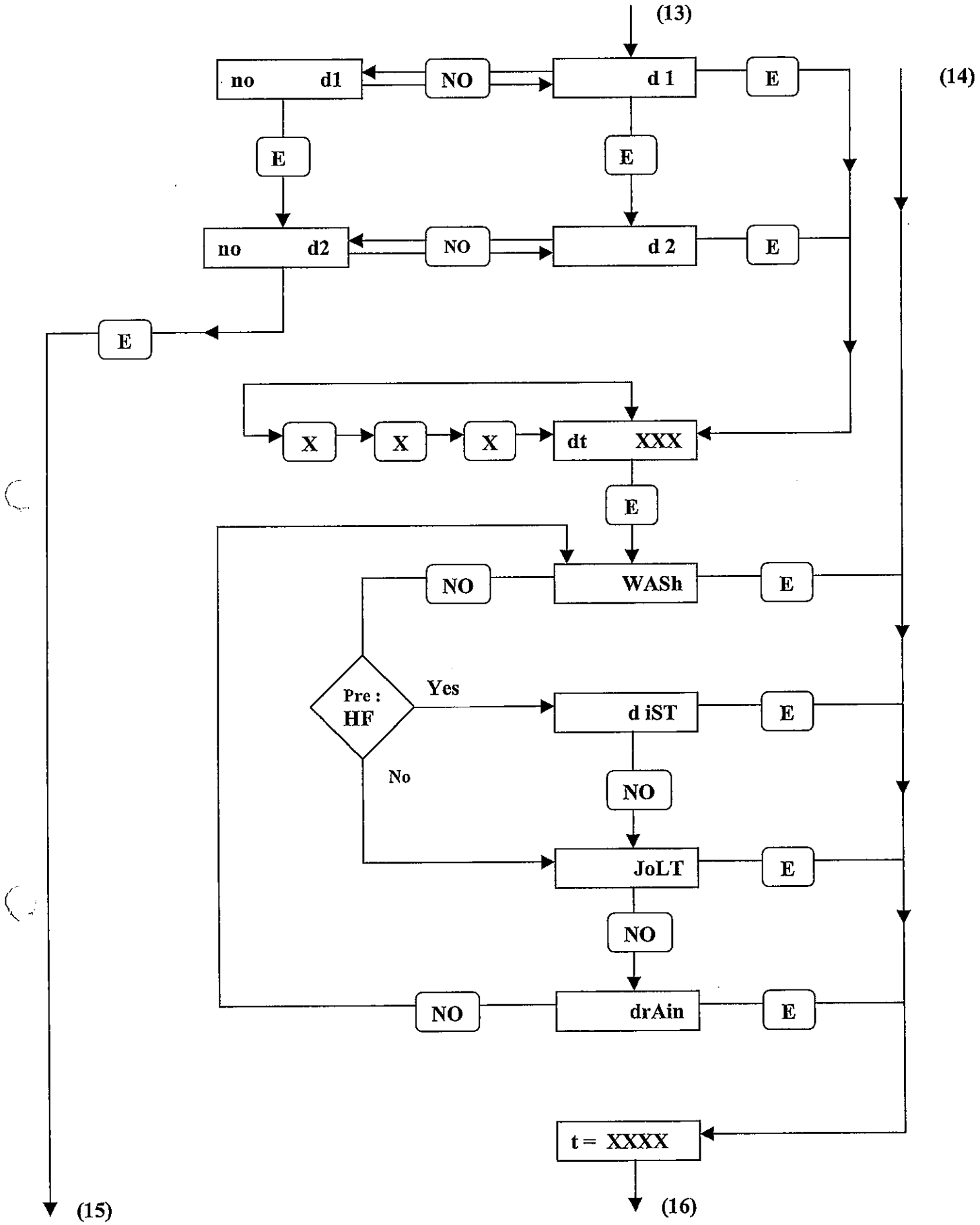
XX. dEti = Delay time (clearance after spinning)

Press "*E*".

td XXX = Delay time (clearance after spinning)

With "*X,X,X*" enter the time and press "*E*".
Time to enter: 30 to 180 secs after spin 1
60 to 180 secs after spin 2

For machine with mechanical brake use the min. values


(13)
(14)
no d1
NO
d 1
E
E
E
no d2
NO
d 2
E
E
X
X
X
dt XXX
E
NO
WASh
E
Pre : HF
Yes
d iST
E
No
NO
JoLT
E
NO
NO
drAin
E
t = XXXX
(15)
(16)

PROGRAMMING MODE

d1 = Drain 1

Select *"d1"* or *"d2", "rd1"* or *"do"* with *"No"* and confirm with "*E*".
If *"do"* is selected, the water will not be discharged.

dt XXX = Drain time

With *"X,X,X"* enter the drain time (Max. 180 seconds) and press *"E"*. With "NO" select from *"WASh"*, "*diSt*", "*JoLt*" and "*DrAin"* which action should be performed in between two discharges and confirm with *"E"*.

→ ***WASh*** = Washing movement

Washing movement of the drum during water discharge.

→ ***diSt*** = Distribution (Distribution speed) (Not on machines of the type WE ***(no HF))***

Distribution movement of the drum during water discharge.

→ ***Jolt*** = Short spinning (Not applicable)

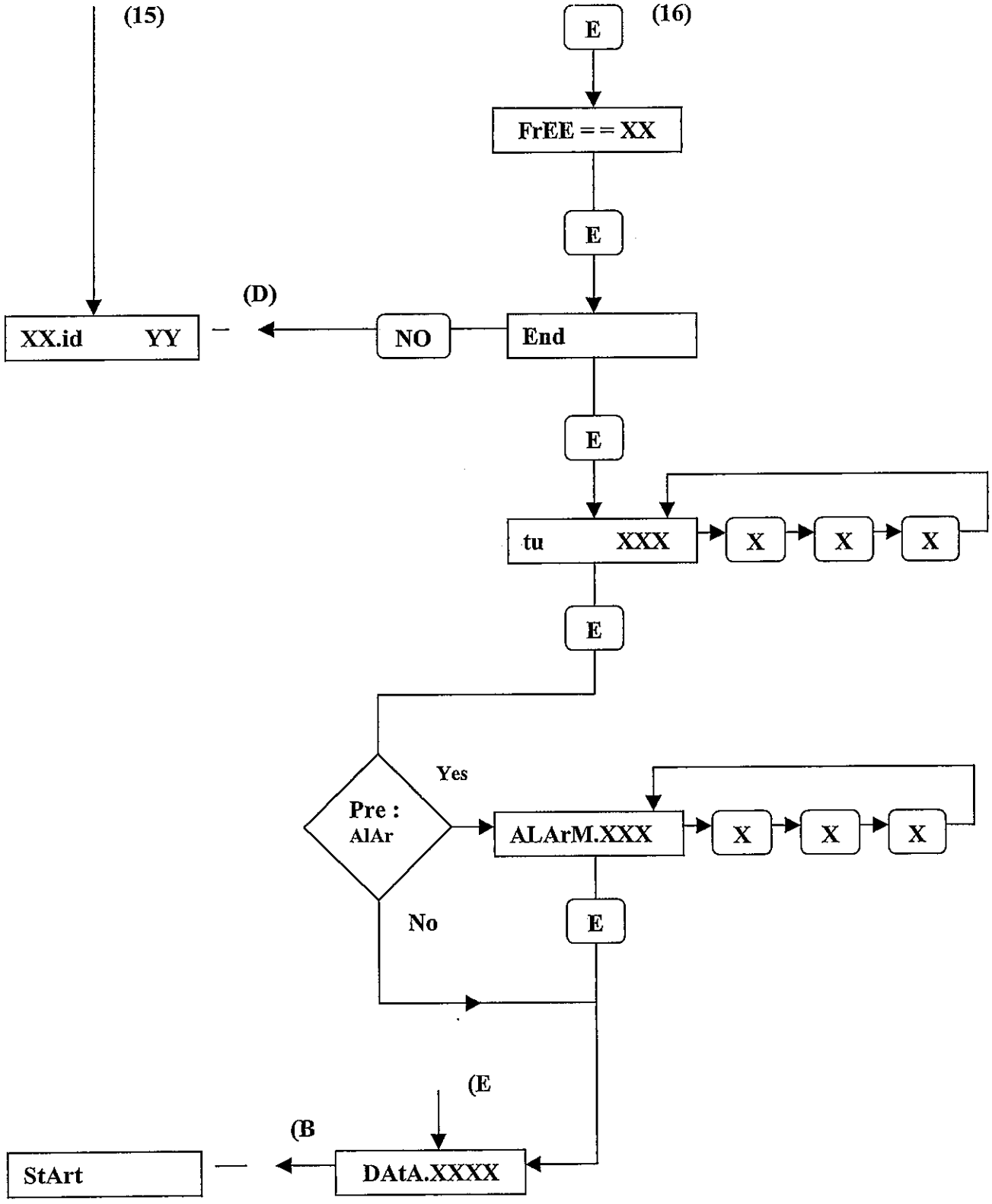
At "dtXXX" enter a minimum of 60 seconds.

→ ***Drain*** = discharge

Water discharge without movement of the drum.

t = XXXX = Time

This is the duration of the program part.
Press *"E"*.


(15)
E
(16)
FrEE = = XX
E
(D)
XX.id YY
NO
End
E
tu XXX
X
X
X
E
Yes
Pre :
AlAr
ALArM.XXX
X
X
X
No
E
(E
(B
StArt
DAtA.XXXX

PROGRAMMING MODE

FrEE == XX = the maximum number program parts to program.

You can program 400 program parts at the most.
Press "*E*".

End = End of a program part

Press "***NO***" to proceed with the next program part (transfer to "***XX.id YY***").
YY stands for the following program part number.
Press ***"E"*** to set the end of the program.

Tu XXX = Tumble (Untwinning)

This is being executed in a washing rhythm of 6 secs action and 9 secs stop time. The lowest speed that occurs in this program is being used (on frequency controlled machines).
With "*X,X,X*" , enter the tumble time (30 to 999 secs) and press "E".
If no untwinning is needed, you can enter 0. A dwell time of 1 minute is then performed.

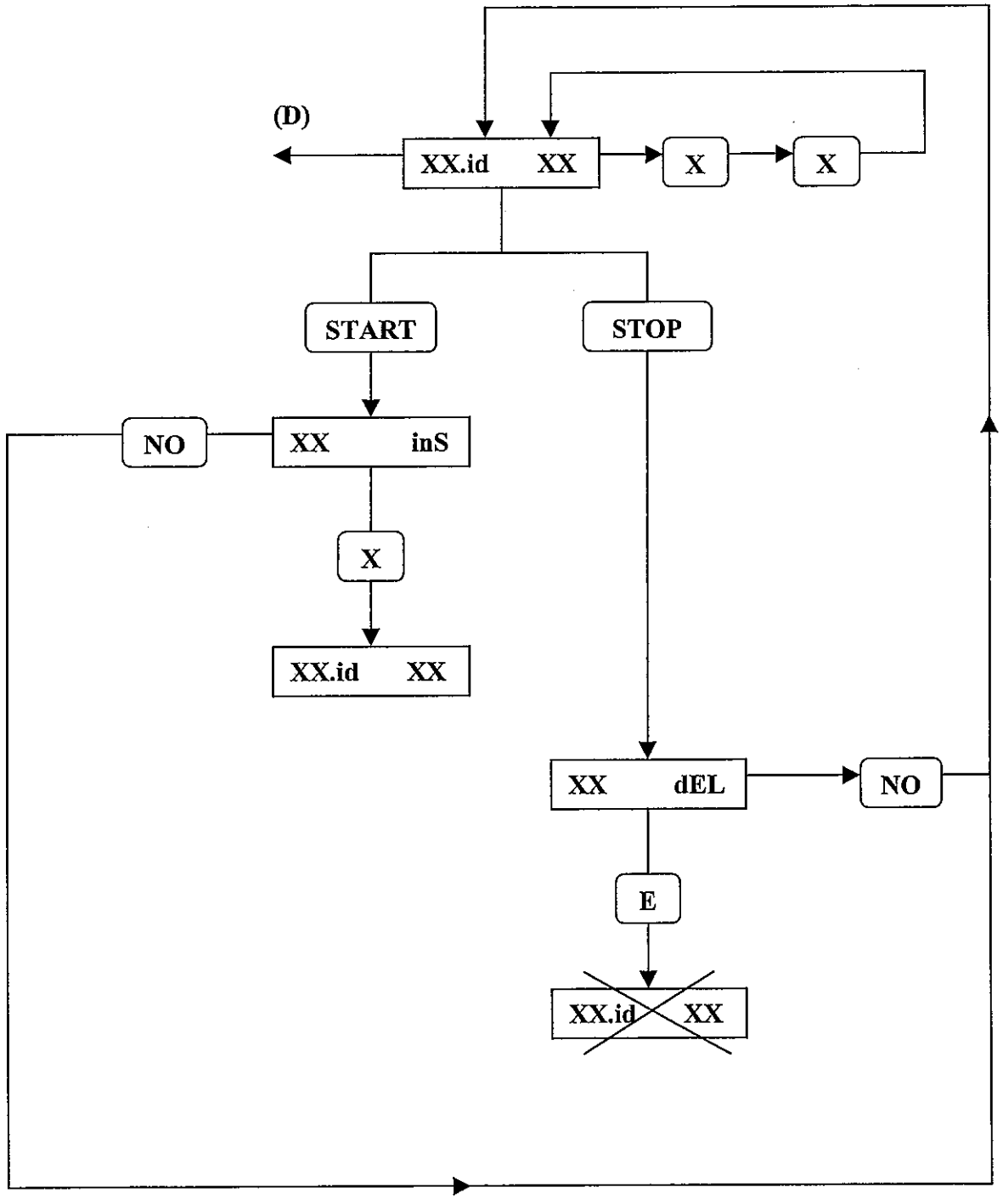
ALArm.XXX

Here is where you can activate the alarm signal.
With "*X,X,X*", enter the time (0 to 250 secs) during which you want to hear the alarm.
This option is only displayed when selected in pre-program (see ***"ALARM"***).

If "999" was entered, the alarm will remain activated until the door is opened.

Data.XXXX

At the end of the programming, the new "checksum" is displayed during a couple of seconds, then proceed with ***"StArt"***.


(D)
XX.id XX
X
X
START
STOP
NO
XX inS
X
XX.id XX
XX dEL
NO
E
XX.id XX

PROGRAMMING MODE

INSERTING AND DELETING A PROGRAM PART

Start the programming procedure till "*XX.id XX*"

→ ***Inserting a program part***

Press "***START***"

XX. inS = Insert

Press ***"E"***.
The program part ***"XX"*** is advanced with one position. ***"XX.id XX"*** reappears on the display. This program part can now be re-entered.

Example:

Program "01" with 4 program parts (01, 02, 03, 04).
Between 02 and 03, one program part has to be inserted.

Select "***01.id 03***" and press "***START***". "***03ins***" reappears on the display. Press "***E***". Now "***01.id 03***" reappears. Program part "03" should now be re-entered.
The previous part "03" has moved on to "04", and "04" has moved on to "05".

If there should be insufficient space in the "Ram memory", the error message "Ram full" will appear.

→ ***Deleting a program part***

Press "***STOP***".

XX. del (blinking) = delete

PROGRAMMING MODE

Press "*E*".
The program part *"XX"* is being deleted. The following program parts are moved back with one position.

Example:

Program "01"with 4 program parts (01, 02, 03, 04)
Part 02 has to be deleted.

Select "***01.id 02***" and press "***STOP***". On the display appears "***02 del***". Press ***"E"***.
Now ***"01.id 02"*** reappears. This used to be program part ***"03"***.
Program part 04 has been moved back to 03.

PROGRAM TABLES

The table on the following pages shows how the programmed data has been saved.

Copy the blank tables on the pages for as many times as there are programs to be set. Fill them in and save them carefully.

COPYING MODE

COPYING MODE

To go to "copying mode": see 2. Division in modes.

Other already self programmed programs can also be copied to another number (between 0 and 39) in the same way and then be used as a basis for other programs. In this way, you can save a lot of time when creating programs that are much alike.

CoPY PrG = Copy Program

To confirm, press "***E***".
To cancel, press any key (transition to "***StArt***")

SourCE.XX = program to copy

With ***"X,X"***, enter a program and confirm with "***E***".

DESt. YY = Destination (destination of the copied program)

With "***Y,Y***", enter a program number and confirm with "***E***".

XX .... YY = Confirmation of copy

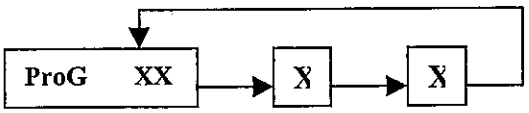
To confirm: press "***E***". (transition to "***StArt***")
To cancel: press any key (transition to "***StArt***")

If there should be insufficient space in the "Ram memory" the error message "Ram full" will appear.

OPERATING MODE

To go to "Operating mode": see 2. Division in modes

SELECTING A PROGRAM

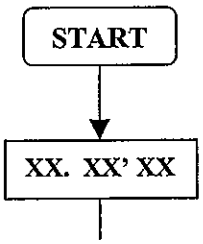


ProG XX = Program XX (e.g. program 01)

If necessary, select another program number.
The program number is shown on the display.

➔ To select a program number above 9, you need to enter the number as a combination.
E.g.: Program 25: enter "2" + "5"

STARTING A PROGRAM



Press "*I*"
The program is now started

"*XX. XX. XX*" appears on the display (e.g. "*01.41'15"*)

01 = ***program part number***
41'15 = ***Total resting programming time***

When the door hasn't been shut properly, the message "door.oPEN" appears.
When a program number has been selected, which isn't linked with a program yet, "A2" blinks on the display during 10 seconds.

OPERATING MODE

COURSE OF THE PROGRAM

During the program, the program time will count down per seconds.
After a program part has been performed, the next program part number appears.

"XX.XX'XX" (e.g. "01.41'15.")

When water is being supplied, the first decimal point will illuminate.
As long as a level control is being performed at the same time, the decimal point **will blink.**

"XX.XX' X.X" (e.g. "01.41'1.5")

When the water is heated, the second decimal point will illuminate.
As long as a temperature control is being performed at the same time the decimal point **will blink**.

"XX. XX' .XX" (e.g. "01.41'.15")

When the water is being discharged, the third decimal point will illuminate.
As long as a distribution control is being performed at the same time, the decimal point **will blink**.

"XX. XX' .XX (e.g. "01.41'.15")

When high spinning, the fourth decimal point will illuminate.
When low spinning, this decimal point **will blink**.

"PXX.End"

When the entire program has been executed, ***"PXX.End"*** (**e.g. *"P01.End"***) appears and the buzzer will be activated for about 10 seconds (if the buzzer " bu= "in" pre-program" has been selected). On programs where an alarm signal has been programmed, (*AlArM.XXX*) this is now being executed.
When the door is opened, ***"StArt"*** appears.

OPERATING MODE

PROGRAMMED START (NOT ON MACHINES WITH COIN)

Press *"START"* and keep it pressed for more than 5 seconds after a program has been selected.
"dELAY.XX" appears on the display.
By entering a digit between 0 and 99, the start can be postponed per hour.
Press *"START"* again to start the count down (the decimal point blinks).
In the last hour, the minutes are blinking on the display.

Remark:

To stop the countdown: Press "STOP".

CHANGING THE PROGRAM

The first 3 minutes after starting, you still have the possibility to change the program. Enter another program number.
"P.XX.StArt" will appear on the display. "P. XX" represents a new program number.
Press *"START"* to confirm.

Remark:

On machines with coin (if a more expensive program has been selected), the amount due *"XXX.XX"* appears. The first program keeps running till the coins are inserted. If this doesn't happen, the program will continue 3 minutes after the first start.

CHANGING THE LEVEL, THE WASHING TIME AND THE TEMPERATURE SETTINGS ONLY ONCE.

Select the program number.
Before starting the program, press "NO" and "E" at the same time.
Per program part, firstly the level *"L.XX"*, the washing time *"t XX"* and then the temperature *"°C XX"* appear on the display. Change these data if necessary and press "E" to proceed with the washing time and temperature settings of the next program.
Start the program with *"START"* after the settings have been modified.

Remark:

The value of *"LECo XX"* and *"HECo XX"* is being changed downward with the same value till a minimum of *"00"* is reached.
The program will only be executed once with the settings modified in this manner. This function cannot be realized on machines with coin.

OPERATING MODE

CONTROLLING THE TEMPERATURE OF THE BATH

By pressing the *"T"* you can read the temperature of the bath (this function is only operative if temperature reading ("t") has been selected in "pre-program".

➔ ***Press once:***

The temperature of the bath is given, followed by a horizontal line (*"t = XX °C*).

➔ ***Press twice:***

The programmed temperature in the program is given, followed by two horizontal lines (*"t = XX °C*).

➔ ***Press three times:***

The highest temperature in the program is given, followed by three horizontal lines (*"t = XX°C"*)

Remark:

When the temperature measured is less than 25°C, the message ***"Cold"*** is displayed..

CONTROLLING THE PROGRAM DURING FUNCTIONING

By pressing *"T"* for ***longer than 3 seconds, and releasing,*** all set steps per program part are displayed one after the other ***during 1 second.***
By pressing and holding *"T"* once more, ***the step performed last*** is displayed. After releasing the *"T"* the next steps are given.
At the end of a program part, "E" should be pressed within that time. If not, the normal cours of the program is displayed.

OPERATING MODE

RUNNING THROUGH THE PROGRAM QUICKLY

While pressing ***"C"***, the program will be accelerated (if accelerate (***"ACCL"***) was selected in "pre-program").
The seconds are counted down faster. The acceleration is interrupted at every major step of the program (discharge, cool down, etc.). Press the acceleration key once more to continue more rapidly.
In this way, you have the possibility not to execute certain parts or the rest of the program.
During ***tumble***, the program cannot be accelerated.

PROGRAMMED STOP

When a "stop" has been programmed, the program will stop there. The water remains in the drum, there are no drum movements and ***"StoP"*** appears on the display.
After pressing ***"START"***, the program continues.

➔ *Stop with stop time*

If a ***stop time*** has been programmed, ***"StoP.tiME"*** and the counting down remaining stop time will alternately appear on the display. After the stop time has expired, the program time will continue automatically.
The machine stops until ***"START"*** is pressed.

➔ *Alarm signal*

If an alarm is programmed, this will be activated at the beginning of the stop. The signal can be stopped by pressing ***"START"*** or ***"STOP"***.

SOAKING (Soak)

If ***"SoAH"*** has been programmed, the program will stop there. The bath will be brought to level 25, kept at the right temperature and every 3 minutes there will be a left – right movement.
The soaking continues untill ***"START"*** is pressed.

OPERATING MODE

→ ***Soaking with soak time***

If a soak time has been programmed, ***"SoAh.tiME"*** and the counting down remaining soak time will appear alternately on the display. After a soak time has expired, the program time shall continue automatically.
If, during this soak time, the START-key is being pressed, the program will be proceeded immediately.

→ ***Alarm signal***

If an alarm has been programmed, this will be activated at the beginning of the soak time. This signal can be stopped by pressing "START" or "STOP".

TIME STOP

By pressing the "STOP" button longer than 3 seconds, the program comes in ***"time stop"*** (If ***"EMEr"*** was selected in the "Pre-programma").
With this you can for instance extend a program for very dirty linen. The time is stopped and the step is continuously executed. The programmed water level and temperature are maintained. During ***"time stop"*** ***"XX.tistop"*** is indicated..
Now you can program the stop time. Therefor press "E".
Now ***"XX.ti XXX"*** is indicated. Program by means of ***"X,X,X"*** the stop time ***(from 1 to 999)*** minutes and press "E". The display shows by turns ***"XX.tistop"*** and the counting stop time left. Once the stop time has passed, the program time continues automatically.

If no stop time is programmed, the stop will be executed continuously until "START" is pressed.
A "time stop" during the spin is automatically broken off after 20 minutes.

OPERATING MODE

BREAK OFF OR STOP A PROGRAM

When the "STOP" button is shortly pressed, the display text blinks and the water is evacuated after ***5 seconds*** (only if emergency stop (***"EMEr"***) was selected in the "Pre-program"). The buzzer starts after ***30 seconds***, ***"oPEn door"*** appears and the door has to be opened. Afterwards ***"CloSE"*** appears.

When the door is locked again, you can:
- Continue the program by pressing "START"
- Stop the program by pressing "STOP"

The stop function operates during spin1 with 60 seconds and during spin2 with 120 seconds delay.

ADD WATER (not for coin machines)

By pressing first button "1" and then one of the buttons from "1" till "9", the corresponding inlet valve is opened.
By pressing first button "2" and then one of the buttons "1" till "3", during a program, the corresponding inlet valve is opened.
While pressing, the chosen inlet valve and level are shown, ***"iX LXX"***. This indication lasts for 3 seconds after releasing.

This function does not operate during the first 3 minutes of the program.

WATER EXHAUST (not on coin machines)

By pressing first the "0" button and than one of the buttons from "1" till "4", the corresponding exhaust valve is opened.

While pressing, the chosen exhaust valve and level are shown ***"dX LXX"***. This indication lasts for 3 seconds after releasing.

This function does not operate during the first 3 minutes of the program.

OPERATING MODE

WARM UP THE BATH

By keeping the button "4" pressed during a program, the heating is activated (Max. 95 °C). While pressing, the temperature of the bath *"°C XX* (of *"°F XX"*) is shown.

This function does not operate during the first 3 minutes of program.

ADDING SOAP (not on machines with coins)

By pressing first button "3" and then button "+", *"SoX tXXX"* is indicated.
By keeping one of the buttons from "1" to "9" pressed then, soap is added through this entry. With button "+" and "-" , soap can be added through entry 10 till 12.
While pressing, the selected soap entry and time when the soap has been added are indicated.

This function does not operate during the first 3 minutes of the program.

OPERATING MODE

ERROR MESSAGES

When there has been a technical failure during a program, ***"AX" or "FX"*** will be indicated at the end instead of ***"PXX.End"***.

"A4": the filling time was longer than ***15 minuten***
"A5": the requested temperature was not achieved after 60 minutes of heating
"F6": the doorlock was unbolted
"A7": ***there is still water in the tub at the end of the program***
"A8": the temperature sensor was not operating
"Ac": the water was not evacuated after 3 minutes: there was no further heating
"Ad": no RPM were measured during the spin (only for frequency controlled machines)
"AH": the spin was not executed (max. number of tilts was exceeded)

These indications disappear after opening the door.

Certain error indications are directly shown and prevent the start of the cycle or stop the cycle.

"F5": The door was opened during the program
"A6": Water level has still been detected at the start of the program
"F6": the doorlock was unbolted during the program
"FA": the tilt switch is blocked
"A9": the temperature is to high at the end of the program

The error messages disappear when the error is repaired.

TEST MODE

The test mode is set up to help finding technical failures and is rather made for specialists.

To enter ***"test mode"***, you have to:
- Put the key switch in front in position "PROG".
- Enter "***E217***" (press fast one after the other) or press "+" or "-" untill ***"test"*** appears.

Give a number from 1 to 7 to choose one of the below mentioned test functions.
To leave the test mode: press the "STOP" button.

TEST 1: CHECK THE 8 INLETS

Here is indicated if the inlet contacts are opened (o) or closed (c).

InP.tHEr.o : Heat motor security (Not applicable)
InP.hEy.o : key switch
InP.LOCh.o : Doorlock S2
InP.door.o : Doorlock S1
InP.tilt.c : Tilt switch
InP.Sens.c : RPM sensor (Not applicable)
InP.tiHo.o : Not applicable

Example:

"***tl.in P 1.o***" = Inlet 1 (heat motor security) open
"***tl.in P 1.c***" = Inlet 2 (heat motor security) closed

To check the next inlet: press "E"
To check the previous inlet: press "NO"
To stop this test: press "STOP".

TEST MODE

TEST 2: CHECK THE RPM

Step by step, the basic speeds of the machine are executed.
Press "E" to go to the next step.

P000u0.00	
P000u0.00	The door is locked
L0Xxu0.45	The drum turns left at wash speed. The target rpm are indicated on the right, whereas the control signal (XX) is indicated on the left.
P000u0.00	Pause
r0Xxu0.45	The drum turns right at wash speed. The target rpm are indicated at the right, whereas the control signal (XX) is indicated on the left.
d0Xxu0.65	The drum turns right at distribution speed. The target rpm are indicated at the right, whereas the control signal (XX) is indicated on the left.
L0XXuS.00	The drum turns right at low spin. The target rpm are indicated at the right, whereas the control signal (XX) is indicated on the left
H0XXuI.00	The drum turns right at high spin. The target rpm are indicated at the right, whereas the control signal (XX) is indicated at the left.

To exit the test mode: press the "STOP" button.

TEST 3: COIN METERS

Not applicable

TEST 4: CALIBRATE THE WATER LEVEL SENSOR

In this program, you can program the 0-level, maximum level and the number of divisions.
Wait to start the program until the water is out of the tub.
The display indicates ***"t4.LEV 00.0"***
By pressing "0", the level is calibrated.
By pressing "START", the discharge valve will be closed and water will be taken. The level is shown on the display. When the value does not longer increase on the display, this means that the highest level is achieved. The display shows the respective water level.
Press "STOP" to interrupt the water inlet.
Press "1". Through this, the highest level is calibrated.
Now program at "t5.LEV XX.X" the number of divisions (maximum 99) and press "E" .
To stop the test, press the "STOP" button again.

TEST MODE

TEST 5: CHECK THE TEMPERATURE SENSOR

The display shows "tS.XX.X". **"XX.X"** means the respective temperature in the tub.
To stop this test, press the "STOP" button once again.

TEST 6: CHECK THE 24 OUTLETS

Here you can activate by turns the outlet contacts.
To check the next outlet, press "E".
By pressing "0" and "1", the contact is opened or closed and the last display shows respectively "o" (open) or "c" (closed).
To check the previous outlet, press "NO".
To stop this test, press the "STOP" button.

Out.door .o :	Doorlock
Out.rD1 .o :	Exhaust valve 3
Out.rD2 .o :	Exhaust valve 4 (Not applicable)
Out.rP .o :	Circulation pump
Out.ir3 .o :	Recycling inlet valve 3 (Not applicable)
Out.ir2 .o :	Recycling inlet valve 2
Out.hEAt .o :	Heating
Out.ir1 .o :	Recycling inlet 1
Out.i9 .o :	water/ product inlet valve 9
Out.ho .o :	water/ product inlet valve 8
Out.col .o :	water/ product inlet valve 7
Out.i6 .o :	water/ product inlet valve 6
Out.i5 .o :	water/ product inlet valve 5
Out.i4 .o :	water/ product inlet valve 4
Out.i3 .o :	water/ product inlet valve 3
Out.i2 .o :	water/ product inlet valve 2
Out.i1 .o :	water/ product inlet valve 1
Out.SO1 .o :	soap pump 1
Out.S12 .o :	soap pump 12
Out.drA1 .o :	Exhaust valve 1
Out.drA2 .o :	Exhaust valve 2

TEST MODE

TEST7: KEY BORD

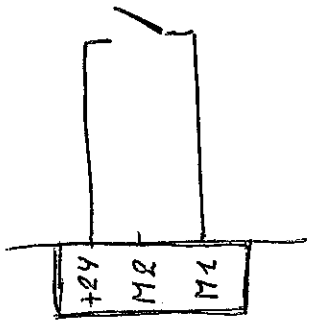
The display shows: *"t8. - -"*
Each time you press a button now, the respective function is shown. To stop this test, press the "STOP" button twice.

RAM RESET

Through this fucntion, Yu can delete ***all date*** from the RAM memory.
Press 0 at ***"tESt"***.
The display shows ***"Code".***
Enter ***"7 5 3"*** (Quickly one after the other).

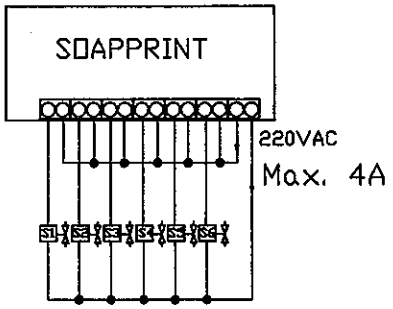
By doing a ram reset, all self programmed program parts are deleted

SOAP INJECTION.

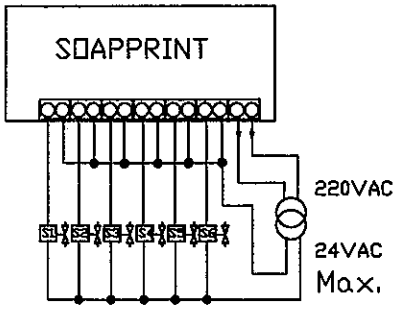


+ Ti Hold.

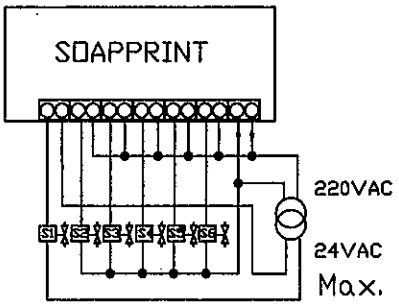
Dr01



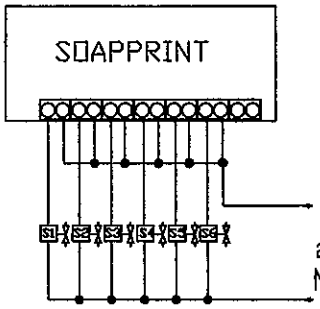
Dr02



Dr03

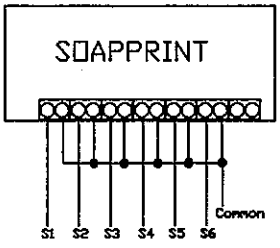


Dr04



24VDC/24VAC/110VAC/220VAC
Max. 10A per relay

Dr05



24VDC/24VAC/110VAC/220VAC
Max. 10A per relay

LIQUID SOAP CONNECTION

Electrical connection of the liquid soap pumps

On machines equipped with liquid soap connection, connect the wires ***directly on the print board*** next to the ground wire connection (option).
Connect as indicated on the wiring diagram.

The 2 connectors at the right give a tension of 220V ~ (max. 4A) which can be applied to drive 20V ~ soap umps. If more than ***4A*** is required, ***an external tension*** will have to be used.
6 connections have been provided, of which one (***S6***) can be used to drive a waterproofing pump (e.g. for rain coats, etc.).

See drawing Dr01

The 220V ~ can be transformed to other values to drive other types of soap pumps.

Examples: 24V ~ soap pumps

See drawing Dr02

Also, pumps with different operating tension can be combined.

Example: 5 pumps 220V ~ and 1 pump 24V ~

See drawing Dr03

With an external tension e.g.: 24V DC

See drawing Dr04

The manufacturer has the right to change, without notice, at any times, the contents of this manual.

Program: *Total time:* *Name*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t								
	RotE A								
	S								
	SP								
TEMPERATURE	TEMP °C								
HEATING. SYS	HEAt								
	HEAt – mod								
	Mod								
TEMP. CONTROL	HECo t								
WASHING ACTION	GentLE								
INLETS	SE- i i1								
	I2								
	I3								
	I4								
	I5								
	I6								
	I7								
	I8								
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE								
LEVEL CONTROL	LECo LS								
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t								
	SP								
DRAIN	D 1 dt								
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST								
	JoLt								
	DrA in								
DELAY TOTAL TIME	DEt, td								
	T =								
TUMBLE	T u								
ALARM	ALArM t								

Program:30 *Total time: 46'00* *Name: HOT WASH*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	7	14	2	2	2			
	RotE A	12	12	12	12	12			
	S	3	3	3	3	3			
	SP	90	90	90	90	90			
TEMPERATURE	TEMP °C	40	90	0	0	0			
HEATING SYS.	HEAt	X	X						
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t	0	0						
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1	X							
	I2 KHW + P2			X	X	X			
	I3 WZW + P3		X						
	I4								
	I5 (KHW)								
	I6 P4			X					
	I7 P5				X				
	I8 P6					X			
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	15	15	30	30	30			
LEVEL CONTROL	LECo LS	15	15	30	30	30			
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t			1		12			
	SP			50		100			
DRAIN	D 1 dt	60	60	X	60	X			
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST	X	X		X				
	JoLt								
	DrA in								
DELAY	DEt, td			60		60			
TOTAL TIME	T =	8.00	15.0	4.00	3.00	15			
TUMBLE	T u					60			
ALARM	ALArM t								

Program:31 *Total time: 46'00* *Naam: WARM WASH*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	7	14	2	2	2			
	RotE A	12	12	12	12	12			
	S	3	3	3	3	3			
	SP	90	90	90	90	90			
TEMPERATURE	TEMP °C	40	60	0	0	0			
HEATING SYS.	HEAt	X	X						
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t	0	0						
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1	X							
	I2 KHW + P2			X	X	X			
	I3 WZW + P3		X						
	I4								
	I5 (KHW)								
	I6 P4			X					
	I7 P5				X				
	I8 P6					X			
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	15	15	30	30	30			
LEVEL CONTROL	LECo LS	15	15	30.	30	30			
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t			1		12			
	SP			50		100			
DRAIN	D 1 dt	60	60	X	60	X			
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST	X	X		X				
	JoLt								
	DrA in								
DELAY	DEt, td			60		60			
TOTAL TIME	T =	8.00	15.0	4.00	3.00	15			
TUMBLE	T u					60			
ALARM	ALArM t								

Program:32 *Total time: 21'00* *Name: COLD WASH*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	9	2	2	2				
	RotE A	3	3	3	6				
	S	12	12	12	12				
	SP	50	50	50	50				
TEMPERATURE	TEMP °C	20	0	0	0				
HEATING SYS.	HEAt	X							
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t	0							
WASHING ACTION	GentLE								
INLETS	SE- i il KZW + P1	X							
	I2 KHW + P2		X	X	X				
	I3 WZW + P3								
	I4								
	I5 (KHW)								
	I6 P4		X						
	I7 P5			X					
	I8 P6				X				
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	20	30	30	30				
LEVEL CONTROL	LECo LS	20	30	30	30				
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t				1				
	SP				50				
DRAIN	D 1 dt	60	60	60	X				
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST	X	X	X					
	JoLt								
	DrA in								
DELAY	DEt, td				60				
TOTAL TIME	T =	10	3	3	4				
TUMBLE	T u				60				
ALARM	ALArM t								

Program:33 *Total time: 25'00* *Naam: GENTLE WASH*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	5	7	2	2	2			
	RotE A	12	12	12	12	12			
	S	3	3	3	3	3			
	SP	90	90	90	90	90			
TEMPERATURE	TEMP °C	0	30	0	0				
HEATING SYS.	HEAt		X						
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t	0	0						
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1	X							
	I2 KHW + P2			X	X	X			
	I3 WZW + P3		X						
	I4								
	I5 (KHW)								
	I6 P4			X					
	I7 P5				X				
	I8 P6					X			
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	25	35	35	35	35			
LEVEL CONTROL	LECo LS	25	35	35	35	35			
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t					2			
	SP					50			
DRAIN	D 1 dt		60	60	60	X			
	D 2 dt								
	Rd1 dt								
	D0	X							
	WASh								
	D iST		X	X	X				
	JoLt								
	DrA in								
DELAY	DEt, td					60			
TOTAL TIME	T =	5	8	3	3	5			
TUMBLE	T u					60			
ALARM	ALArM t								

Program:34 *Total time: 64'00* *Name: HOT WASH 2 (HOSPITAL)*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	5	10	7	14	2	2	2	
	RotE A	12	12	12	12	12	12	12	
	S	3	3	3	3	3	3	3	
	SP	90	90	90	90	90	90	90	
TEMPERATURE	TEMP °C	0	30	60	90	0	0	0	
HEATING SYS.	HEAt		X	X	X				
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t		0	0	0				
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1	X	X						
	I2 KHW + P2			X		X	X	X	
	I3 WZW + P3				X				
	I4								
	I5 (KHW)								
	I6 P4					X			
	I7 P5						X		
	I8 P6							X	
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	25	25	15	15	30	30	30	
LEVEL CONTROL	LECo LS	25	25	15	15	30	30	30	
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t				1			12	
	SP				50			100	
DRAIN	D 1 dt	60	60	60	X	60	60	X	
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST	X	X	X		X	X		
	JoLt								
	DrA in								
DELAY	DEt, td				60			60	
TOTAL TIME	T =	6	11	8	16	3	3	15	
TUMBLE	T u							60	
ALARM	ALArM t								

Program:35 *Total time: 37'30* *Name: STARCH*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	**3**							
	RotE A	**15**							
	S	**2**							
	SP	**90**							
TEMPERATURE	TEMP °C	**0**							
HEATING SYS.	HEAt								
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t								
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1	**X**							
	I2 KHW + P2								
	I3 WZW + P3								
	I4								
	I5 (KHW)								
	I6 P4								
	I7 P5								
	I8 P6								
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	**25**							
LEVEL CONTROL	LECo LS	**25**							
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t	**10**							
	SP	**100**							
DRAIN	D 1 dt	**X**							
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST	**X**							
	JoLt								
	DrA in								
DELAY	DEt, td	**60**							
TOTAL TIME	T =	**15**							
TUMBLE	T u	**60**							
ALARM	ALArM t								

Program:36 *Total time 24'30* *Name: DUVET*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	6	6	2	2	2			
	RotE A	5	5	5	5	5			
	S	10	10	10	10	10			
	SP	60	60	60	60	60			
TEMPERATURE	TEMP °C	35	40	0	0				
HEATING SYS.	HEAt	X	X						
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t	0	0						
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1	X	X	X					
	I2 KHW + P2				X	X			
	I3 WZW + P3								
	I4								
	I5 (KHW)								
	I6 P4			X					
	I7 P5				X				
	I8 P6					X			
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	35	35	35	35	35			
LEVEL CONTROL	LECo LS	35	35	35	35	35			
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t					1			
	SP					50			
DRAIN	D 1 dt	60	60	60	60	X			
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST	X	X	X	X				
	JoLt								
	DrA in								
DELAY	DEt, td	30		30	30	30			
TOTAL TIME	T =	7	7	3	3	4.30			
TUMBLE	T u					60			
ALARM	ALArM t								

Program:37 *Total time: 30'* *Name: SYNTHETIC*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	4	10	2	2	2			
	RotE A	10	10	12	12	12			
	S	4	4	4	4	4			
	SP	90	90	90	90	90			
TEMPERATURE	TEMP °C	35	40	0	0	0			
HEATING SYS.	HEAt	X	X						
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t	0	0						
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1	X		X					
	I2 KHW + P2				X	X			
	I3 WZW + P3		X						
	I4								
	I5 (KHW)								
	I6 P4			X					
	I7 P5				X				
	I8 P6					X			
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	15	15	25	25	15			
LEVEL CONTROL	LECo LS	15	15	25	25	15			
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t					4			
	SP					100			
DRAIN	D 1 dt	60	60	60	60	X			
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST	X	X	X	X				
	JoLt								
	DrA in								
DELAY	DEt, td	30		30	30	60			
TOTAL TIME	T =	5	11	3	3	7			
TUMBLE	T u					60			
ALARM	ALArM t								

Program:38 *Total time:* *Name: SHORT TESTPROGRAM*

SEGMENT	Id	*01*	*02*	*03*	*04*	*05*	*06*	*07*	*08*
WASH TIME	Cyt , t	**3**							
	RotE A	**12**							
	S	**3**							
	SP	**90**							
TEMPERATURE	TEMP °C								
HEATING SYS.	HEAt								
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t								
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1								
	I2 KHW + P2								
	I3 WZW + P3								
	I4								
	I5 (KHW)								
	I6 P4								
	I7 P5								
	I8 P6								
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE								
LEVEL CONTROL	LECo LS								
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t	**7**							
	SP	**100**							
DRAIN	D 1 dt	**X**							
	D 2 dt								
	Rd1 dt								
	D0								
	WASh								
	D iST								
	JoLt								
	DrA in								
DELAY	DEt, td	**30**							
TOTAL TIME	T =	**10**							
TUMBLE	T u	**30**							
ALARM	ALArM t								

Program:39 *Total time: 31'00* *Name: TESTPROGRAM*

SEGMENT	Id	01	02	03	04	05	06	07	08
WASH TIME	Cyt , t	3	3	3	3	3			
	RotE A	12	12	12	12	12			
	S	3	3	3	3	3			
	SP	90	90	90	45	90			
TEMPERATURE	TEMP °C	40	60	90	0	0			
HEATING SYS.	HEAt	X	X	X					
	HEAt – mod								
	Mod								
HEATING CONTROL	HECo t	0	0	0					
WASHING ACTION	GentLE								
INLETS	SE- i i1 KZW + P1	X	X	X	X	X			
	I2 KHW + P2	X		X	X	X			
	I3 WZW + P3		X	X					
	I4								
	I5 (KHW)								
	I6 P4			X					
	I7 P5				X				
	I8 P6					X			
	Ir1								
	Ir2								
	CP								
LEVEL	SE – L LE	35	25	15	25	30			
LEVEL CONTROL	LECo LS	0	0	0	15	20			
SOAP INJECTION	SoAP So 1 t1								
	So 2 t2								
	So 3 t3								
	So 4 t4								
	So 5 t5								
	So 6 t6								
	So 7 t7								
	So 8 t8								
	So 9 t9								
	So 10 t10								
	So 11 t11								
	So 12 t12								
ADD. PROGRAM	Add Cool u								
	Cool u\								
	Add Cool n								
	Cool n\								
	StoP t								
	SoAH t								
	ALArM t								
SPINNING	SP in t			3		9			
	SP			50		100			
DRAIN	D 1 dt	30	30		30	30			
	D 2 dt								
	Rd1 dt								
	D0								
	WASh				X				
	D iST		X						
	JoLt								
	DrA in	X							
DELAY	DEt, td			60		60			
TOTAL TIME	T =	3.30	3.30	7.00	3.30	13.0			
TUMBLE	T u					30			
ALARM	ALArM t								

WPS40 TABLE OF CONTENTS

RS232 COMMUNICATION

After linking the PC or laptop with the optical RS232 port of the PS40, we enter the following code or toggle with +/- on the PS40 key pad until "PROG PC" appears on the display in order to be able to "SEND" programs to or "RECEIVE" programs from the PS40 memory.

The following programs can be sent or received:

- Pre programming
- Programming
- System software (abs-file)
- Machine type (bin-file)

PS40 CONTROL SOFTWARE

With this software we can configure the PS40 and create wash programs:

New = Start with an empty program sheet

Open = Open existing programs in order to edit or for loading the programs in PS40 memory

When you want to start creating a new program, you "click" on **"NEW"**,
the question that follows is: Choose the folder where the new machine files will be created?"

Directory **"Data"**
Click on **"OK"**

Now you can choose the **"File name"**
For example **"Work"**,
Then you click on **"Save"**
And the page with all the program numbers displayed will appear.

When you create a new program always start with the Pre-programmation.

PS40 PRE-PROGRAM ON THE PC

You "click" on the field **<No-Pre-program>** and then **"Edit"**

The display will show the first page of the Pre-programmation.

The first important thing to select is the machine type:
Using the arrow allows you to select the machine type:

" CONFIGURAT40DH1"

If you can not find this the first time when working with the WPS40 software you will find the machine type after having "Uploaded" software or programs from the PS40.

On this first page you will see some standard settings (for example the maximum wash speed) that can not be changed in the WPS40 software.

The only field that can be selected is the Water **"Level control"**

To go to the next pages click on **"Next"**

Select the water inlets (See PS40 Manual).

"Next"

select the drains:

"Check on" d1 and **check also on "pump"** (For all WE and HF series)
even when the drain is executed as a normal drain and not with a pump.

For the other settings we refer to the PS40 manual.

Click on **"NEXT"**

You can select the settings on the last page and then:

"NEXT"

"OK"

And the pre- programmation is finished.

CREATING PS40 WASHPROGRAM ON THE PC

Click on a **<Empty>** field.

Then click on **"New"**

Now you can start creating a new wash program.

To add one step you can use the **"+"**
To delete one step you can use the **"-"**

To copy one column to another you can use the **"Copy"** and **"Paste"** function like in the WINDOWS software.

To fill in a field type a number, or **"/"** or a blank space for no selection.
To select an inlet type **"X"**

The yellow coloured fields mean that the number or sign on this field is of no importance.

A red coloured field is a sign that there is a program mistake or a wrong combination of steps in this program.

If the program is finished you click on **"Save"**,

The next page will show the folder and file where this program is saved.

Now type in a name for the program:

For example: "Hotwash"

The click on **"Save"**

And **"EXIT"**

The new program will be shown on this page together with the other programs.

PROGRAMMING FEATURES

New = explained in the previous chapter

Copy = Copy one wash program into another

Example: Click on an **<EMPTY>** field.

Then click on **"COPY"**

Select from which program you want to copy a wash program from:

Click on "Work.mch"

Click on **"Open"**

Double click on "hotwash.wpi"

The following question will appear: **"Save as"**

Type in the new name: "Warmwash"

Click on **"Save"**

The copy will be displayed.

Edit = To change existing wash programs

See previous chapter "Creating new programs"

Insert = To insert an empty program between two other programs.

Delete = Delete an existing wash program

Archive = Possibility to "archive" certain wash program under the "Archive" directory.

Rename = To rename an existing wash program

Check all = To mark all the programs in order to "Send" or "Receive"

Uncheck all = To delete all the marking signs

SENDING AND RECEIVING WASHPROGRAMS

RECEIVING PROGRAMS

Start from the "Main screen"

Select: **"Create new machine"**

Click **"OK"**

Type in the name of the program file:

For example: "Work2"

The display with all the **<Empty>** fields will appear.

Now select which wash programs you want to load from the PS40 into the PC.

Use **"Check all", "Uncheck all"** and clicking on the field between the number and the wash program name,
This in order to select the wash programs that you want to **"Receive".**

Connect the Infrared – RS232 cable between PS40 and PC.

Select **"PROG PC"** on the PS40 display.

Now click on **"Receive"**

Then confirm, the PC will show when the "Receiving action" is running and when the action is completed.

SENDING AND RECEIVING WASHPROGRAMS

SENDING PROGRAMS

Start from the "Main screen"

Select: "Open machine"

Select a file:

For example: "Work2.mch"

Click on **"Open"**

Double click on "Work2.mch"

The display with all the wash programs will appear.

Now select which wash programs you want to load from the PC into the PS40.

Use **"Check all", "Uncheck all"** and clicking on the field between the number and the wash program name,
This in order to select the wash programs that you want to **"Send"**.

Connect the Infrared – RS232 cable between PS40 and PC.

Select **"PROG PC"** on the PS40 display.

Now click on **"Send"**

Then confirm, the PC will show when the "Receiving action" is running and when the action is completed.

CONFIGURATION

Setting for the serial connections with PS40:

Communication:

Important: Nif set-up has got to be correctly, otherwise it will not be possible to "send" or "receive"

To verify:

Click on **"Nif setup"**

Double click on the Nif that is used for the serial connection with the PS40.

Properties of Serial Nif:

Description: Serial connection with PS40

Nif settings:

Portname: COM1 /COM2 -> Depending on the used PC

Local address: 160

Port settings:

Baudrate: 19200

Tries: 3

ACK timeout: 750

SYSTEM SOFTWARE

This can be used to upgrade the PS40 software.
To do so click on:

New system software

Click on **"Browse"**

Select the new software:

For example "PS40V319.abs"

Click on **"Open"**

Connect the Infrared – RS232 cable between PS40 and PC.

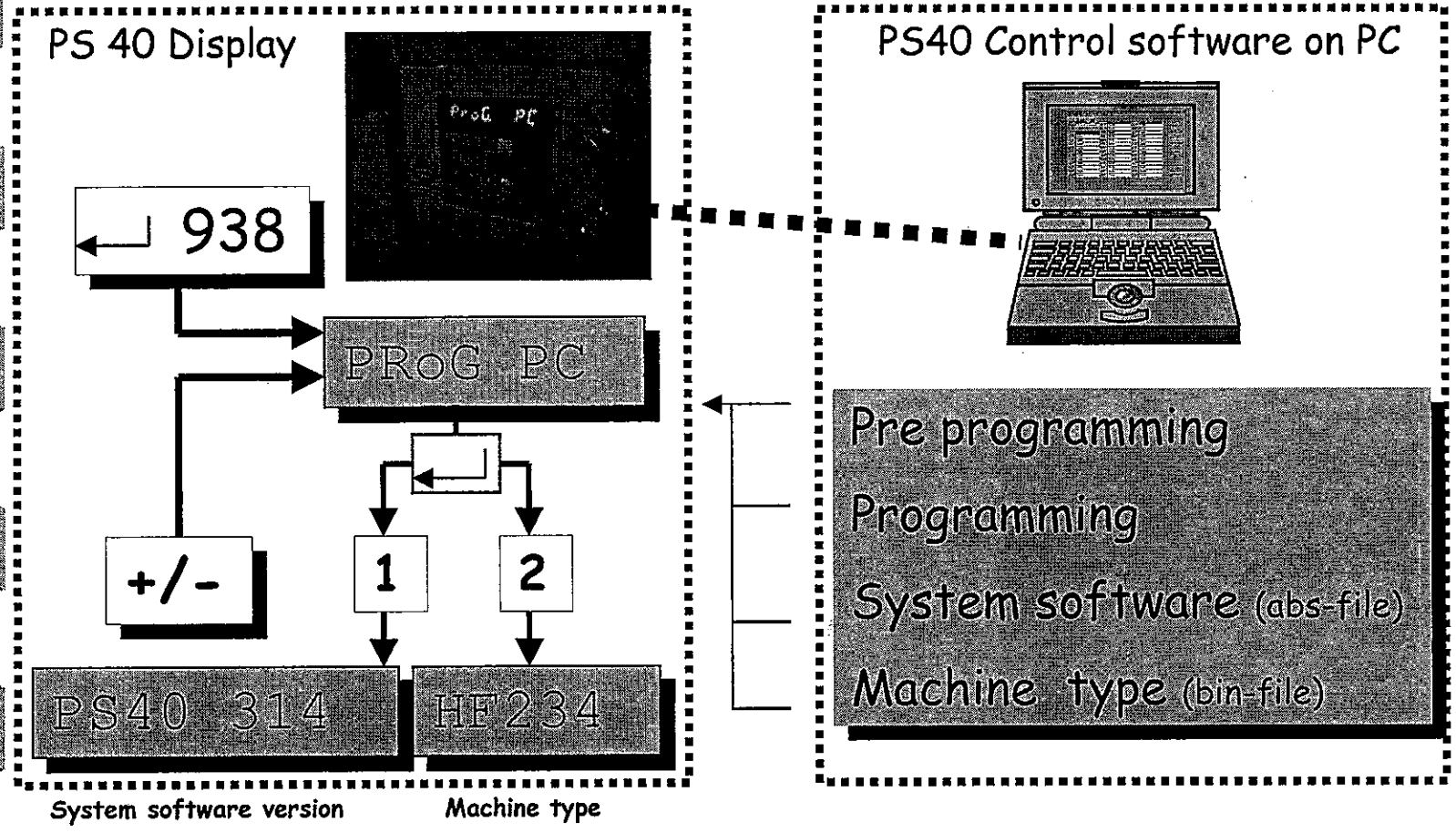
Select **"PROG PC"** on the PS40 display

Then click on **"Transmit"**

The new software will be loaded into the PS40.

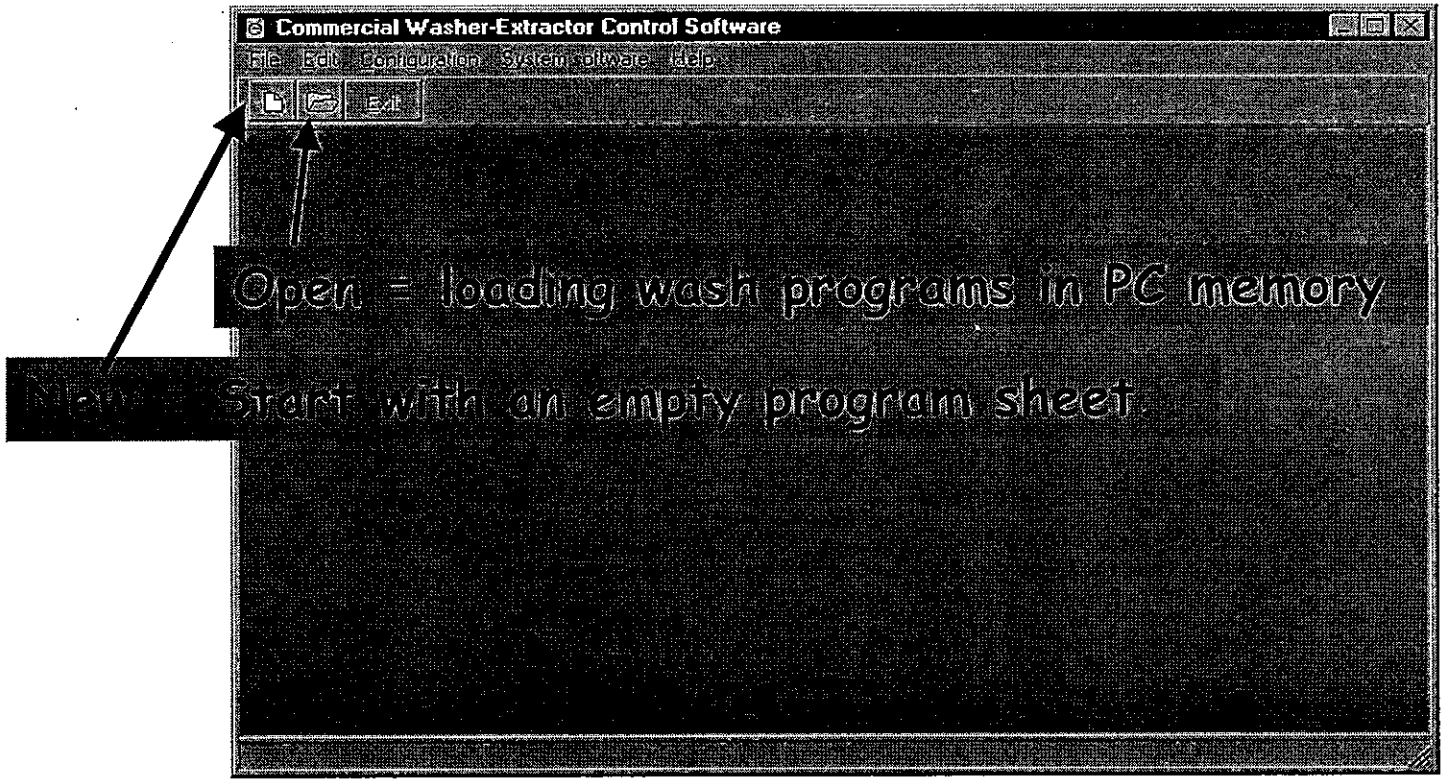
RS232 communication

After linking the PC or laptop with the optical RS232 port of the PS 40, we enter the following code or toggle with +/- on the PS40 key pad until "PROG PC" appears on the display in order to be able to write in the PS40 memory. This isn't necessary for reading.

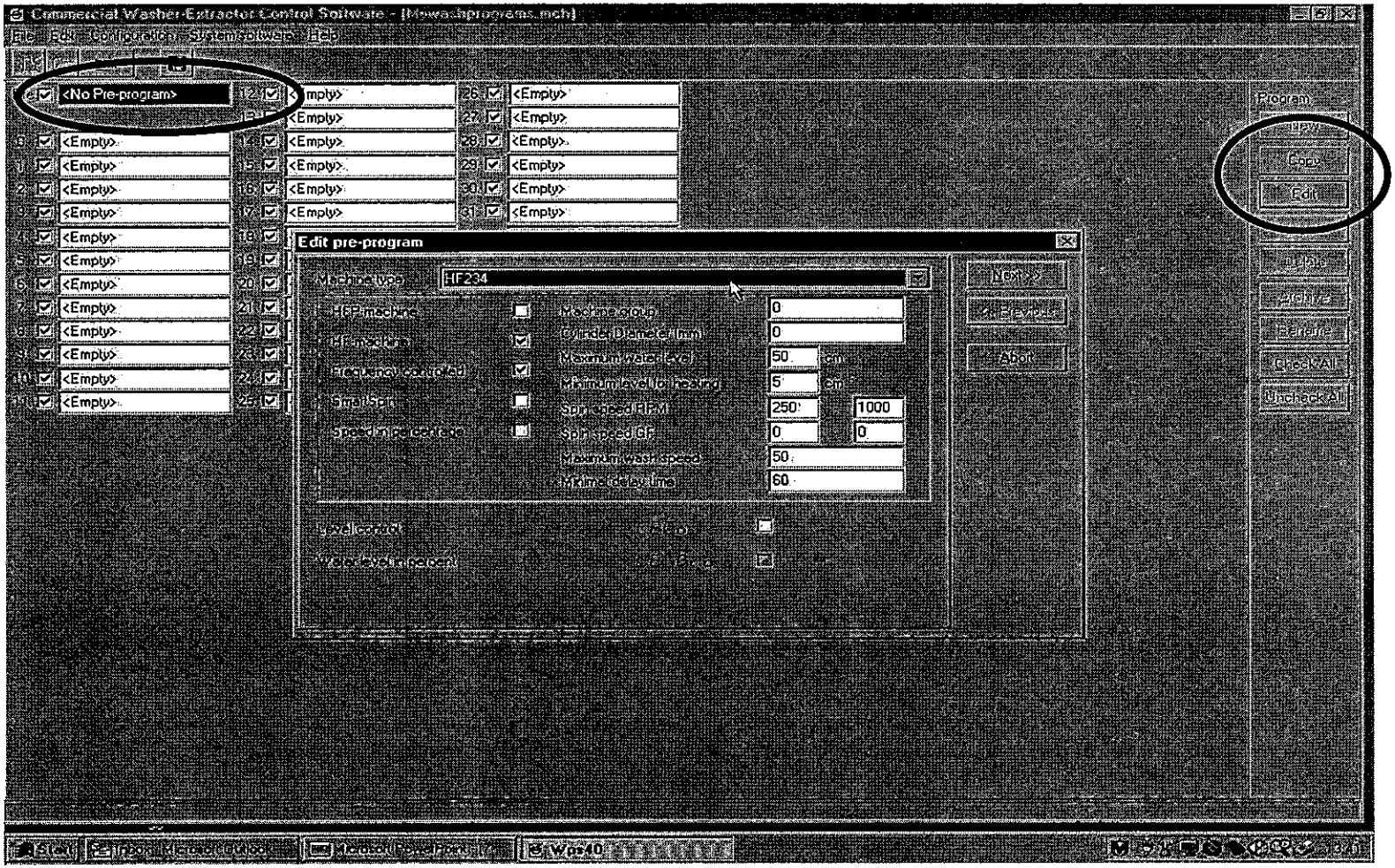


PS40 Control software (MS Windows application)

With this software we can configure the PS40 and create wash programs. When we are done we can hook up our computer to the PS40 and transfer this information or we read information from the PS40.

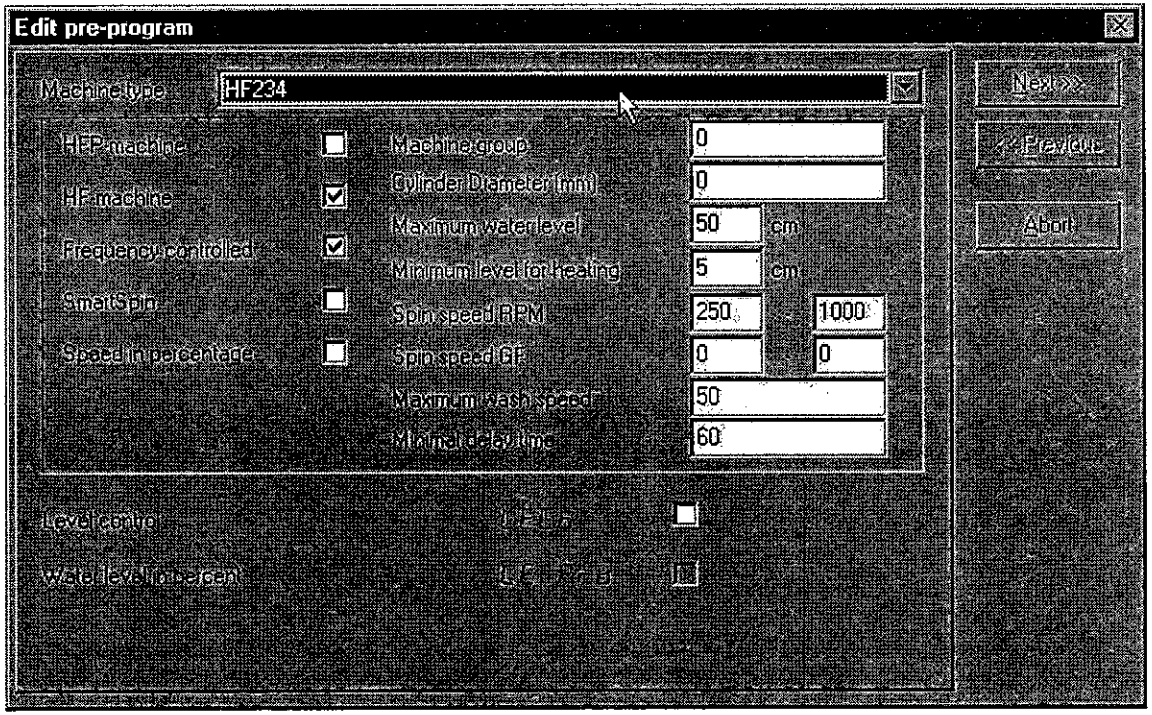


PS40 Configuration (Pre-Program) on the PC.

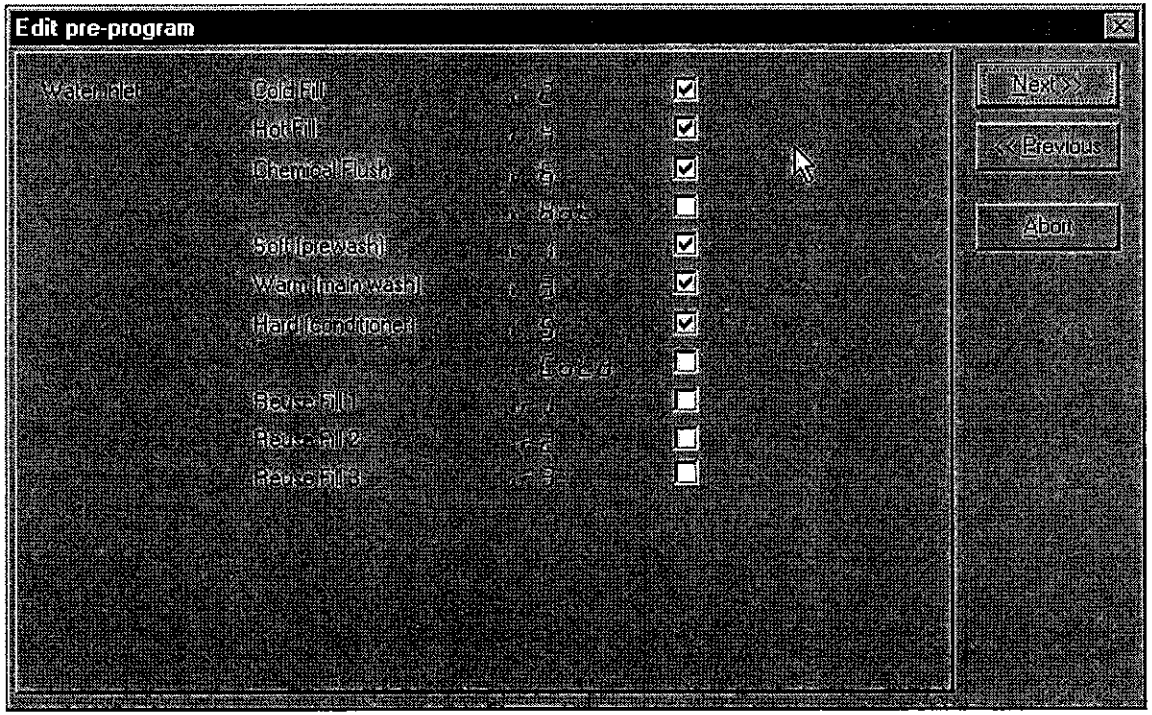


In the pre-programming we choose the washer type. By choosing the type a number of parameters are automatically set:

- DHOOGE TYPE / IPSO TYPE
- Frequency drive or not
- [illegible]
- Soap dispenser model
- Maximum speed, delay time & water level
- level in percent or in cm
- ect



In the next window we select the inlet valves we want to use.



Rp= re cycling pump

d1/d2/rd1/rd2 = drains

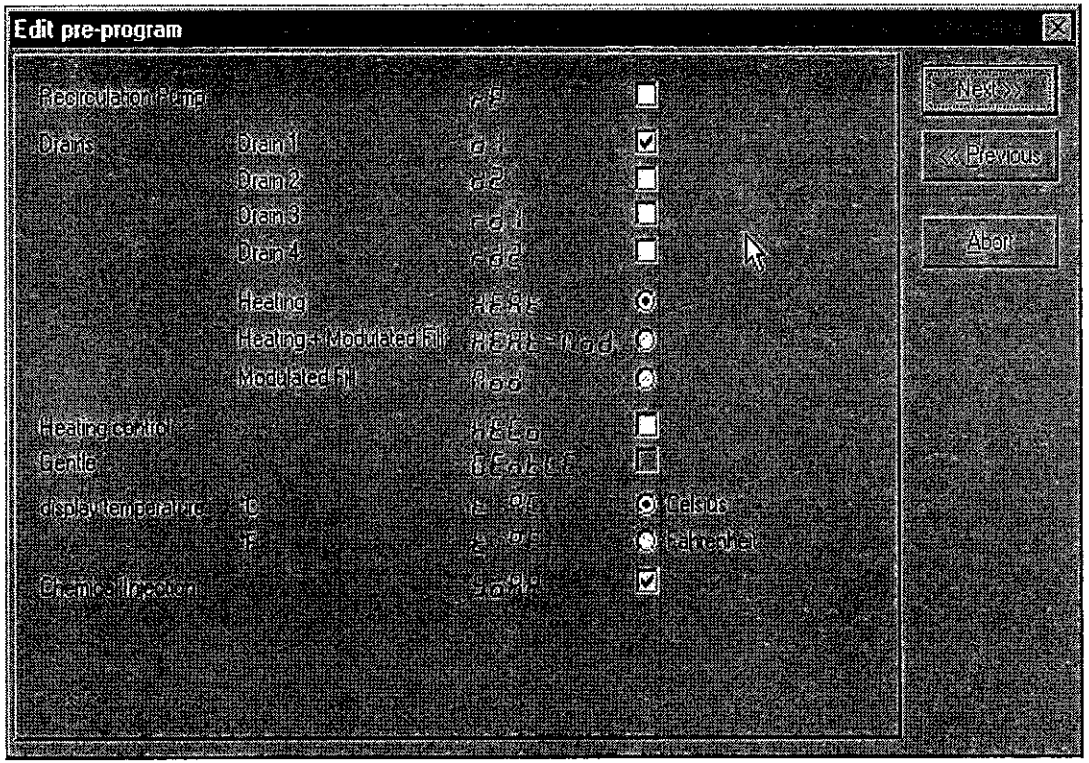
Heat/Heat-Mod/Mod

Heco

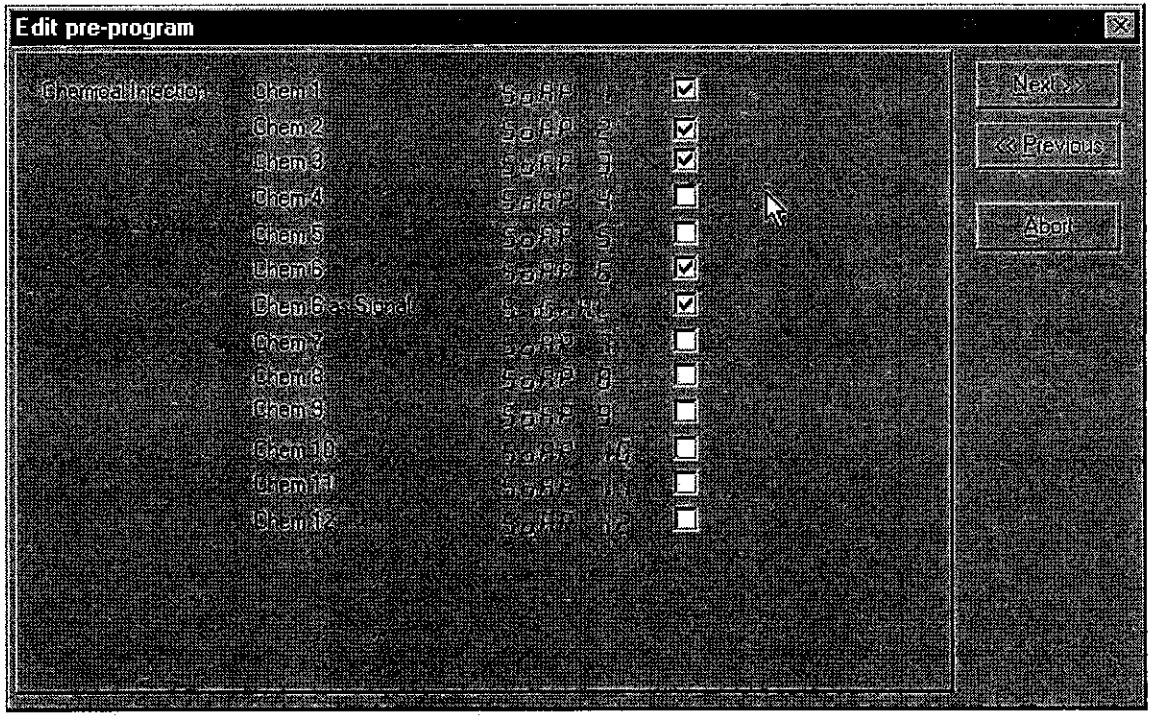
Gentle

°C/°F

Liquid soap pumps



Liquid soap pumps : S1 - S12 & signal (warning)



Add = additonal functions: Cool down / time stop / soak

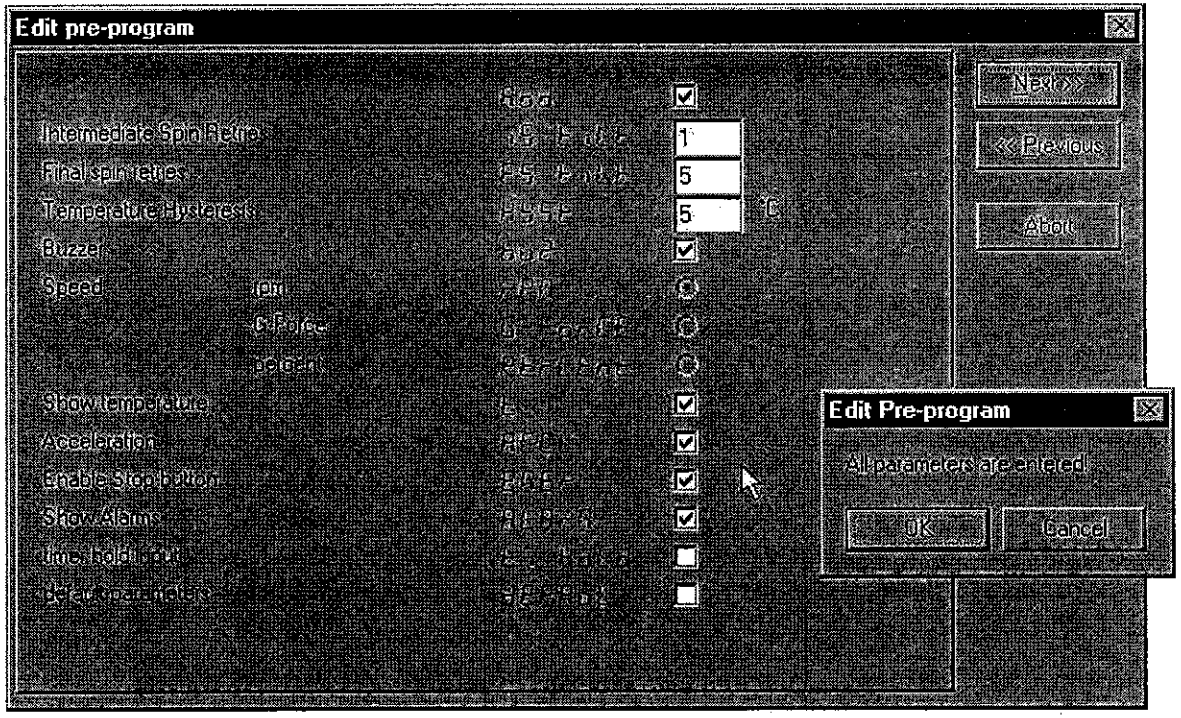
IS tilt = intermediate unbalances

ES tilt = final spin unbalances

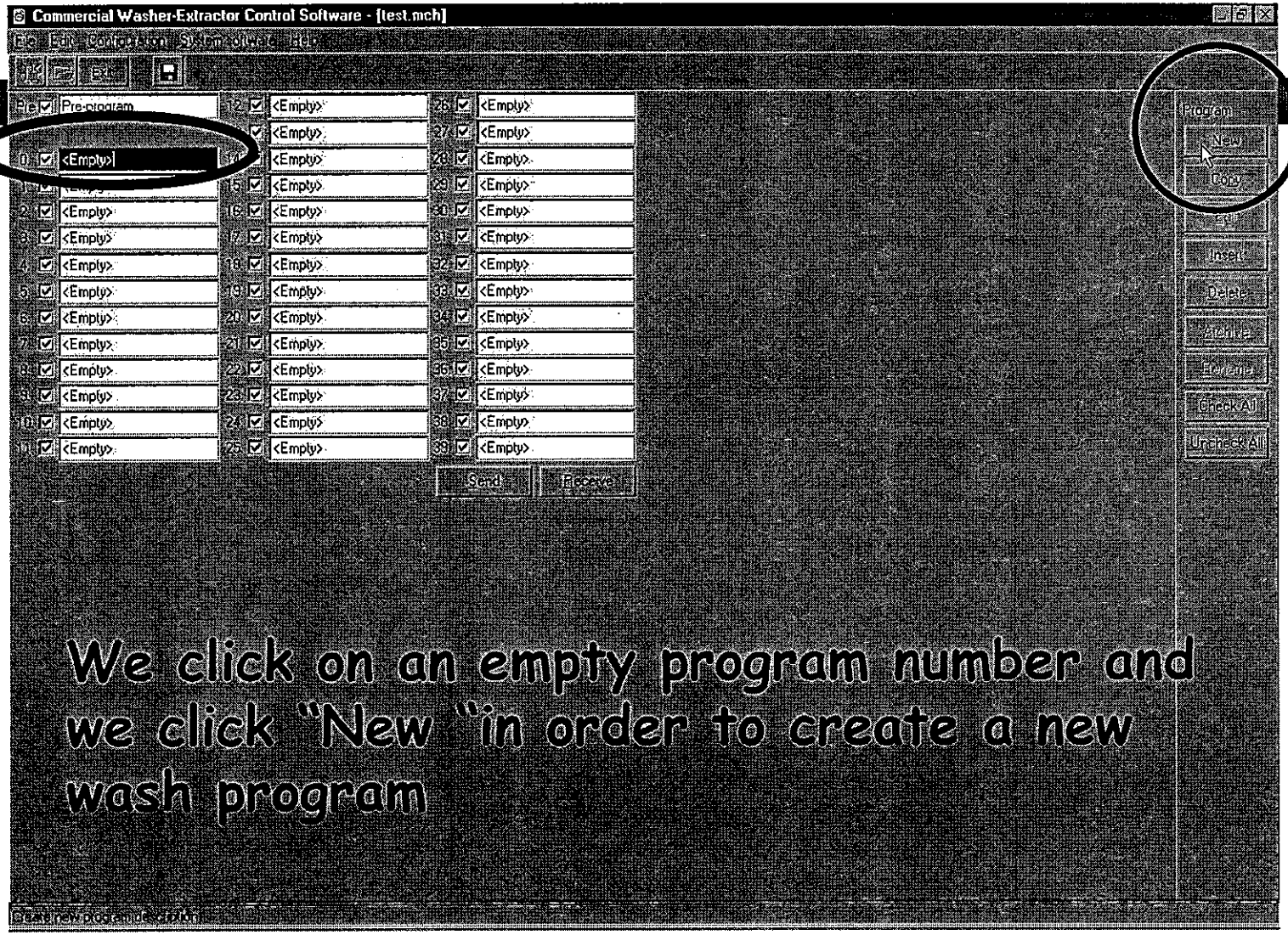
hyst = Temperature hysteresis

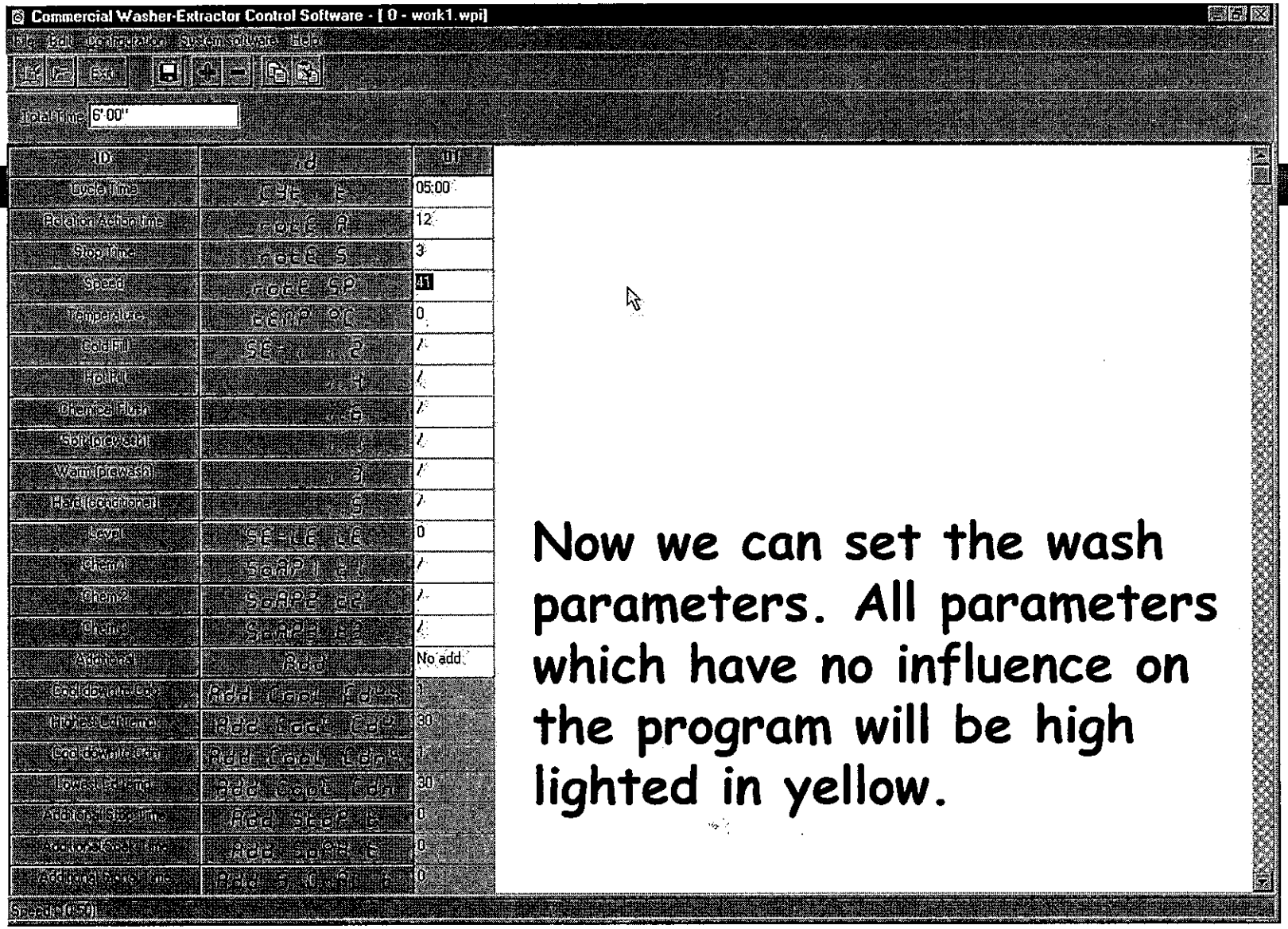
Buz = buzzer

ect.

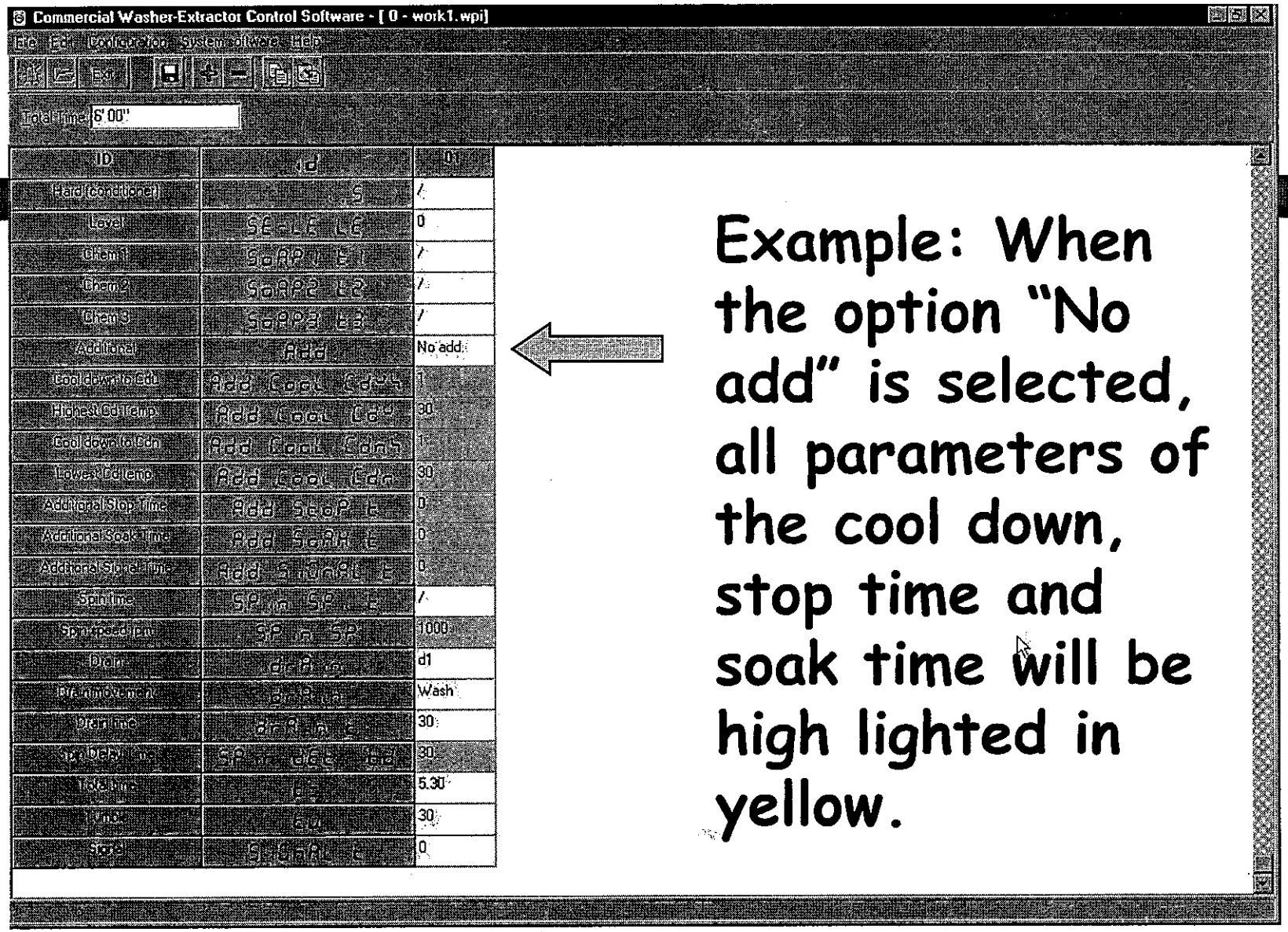


Creating PS40 Wash programs on the PC

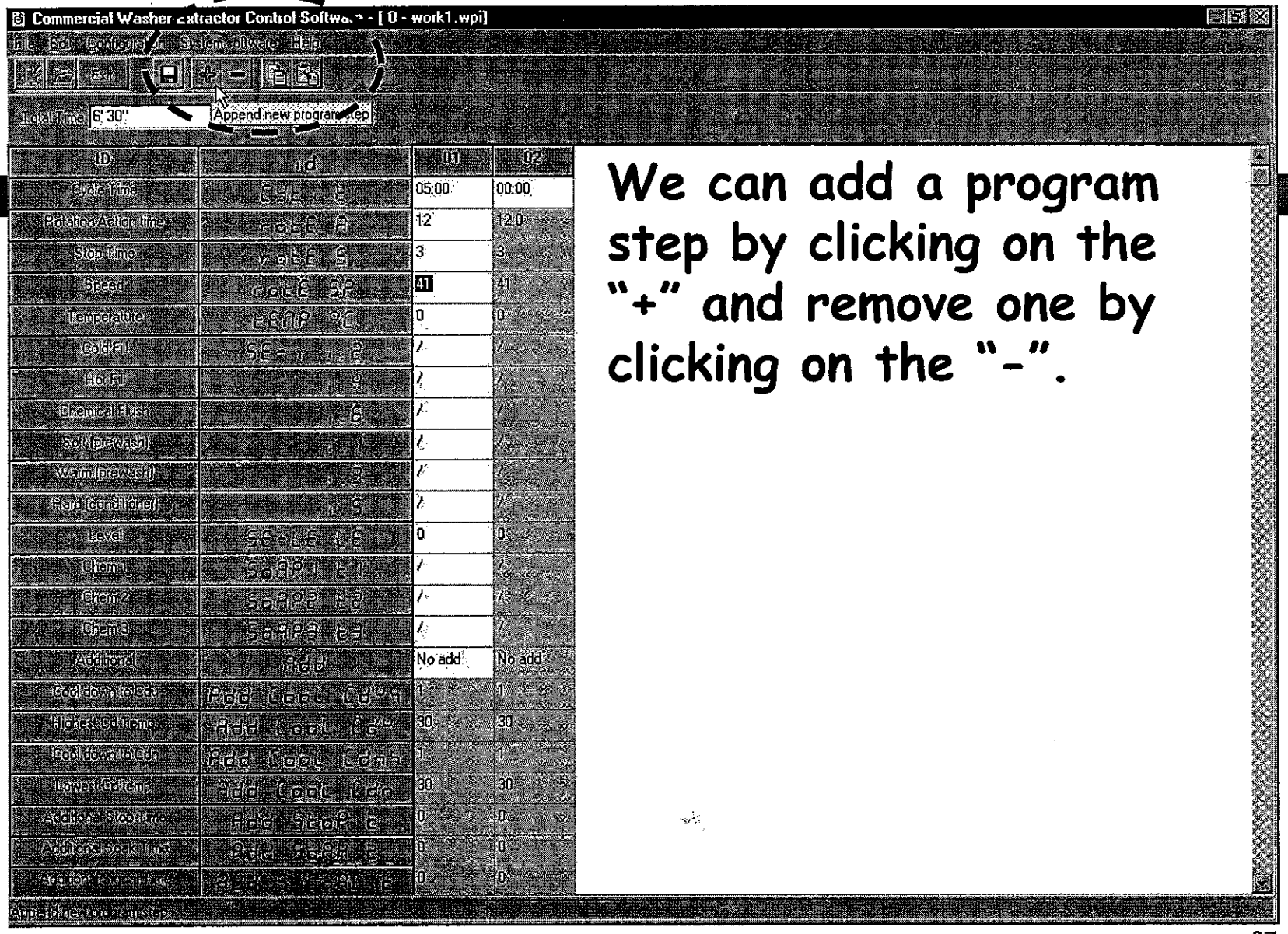




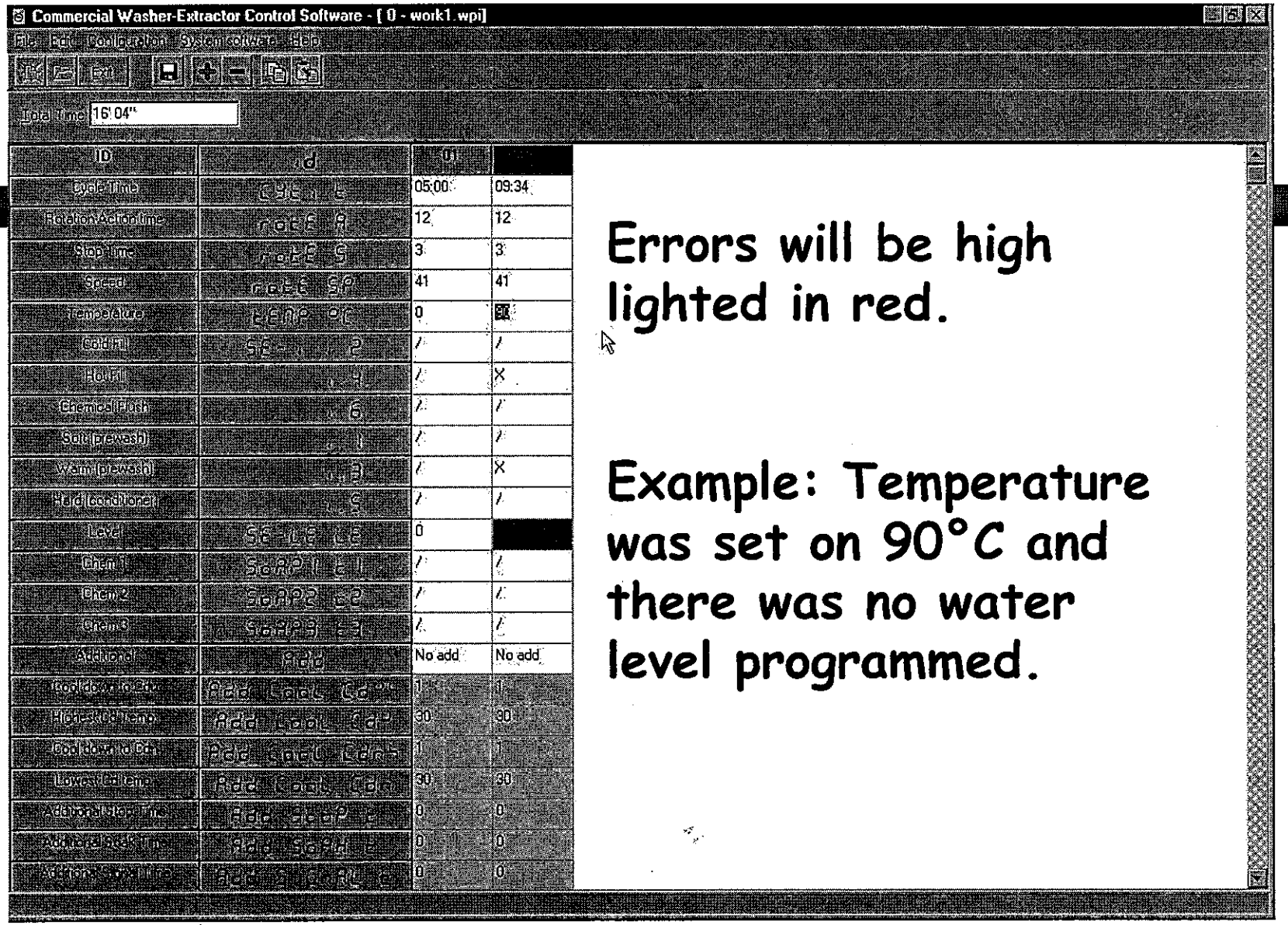
Now we can set the wash parameters. All parameters which have no influence on the program will be high lighted in yellow.



Example: When the option "No add" is selected, all parameters of the cool down, stop time and soak time will be high lighted in yellow.

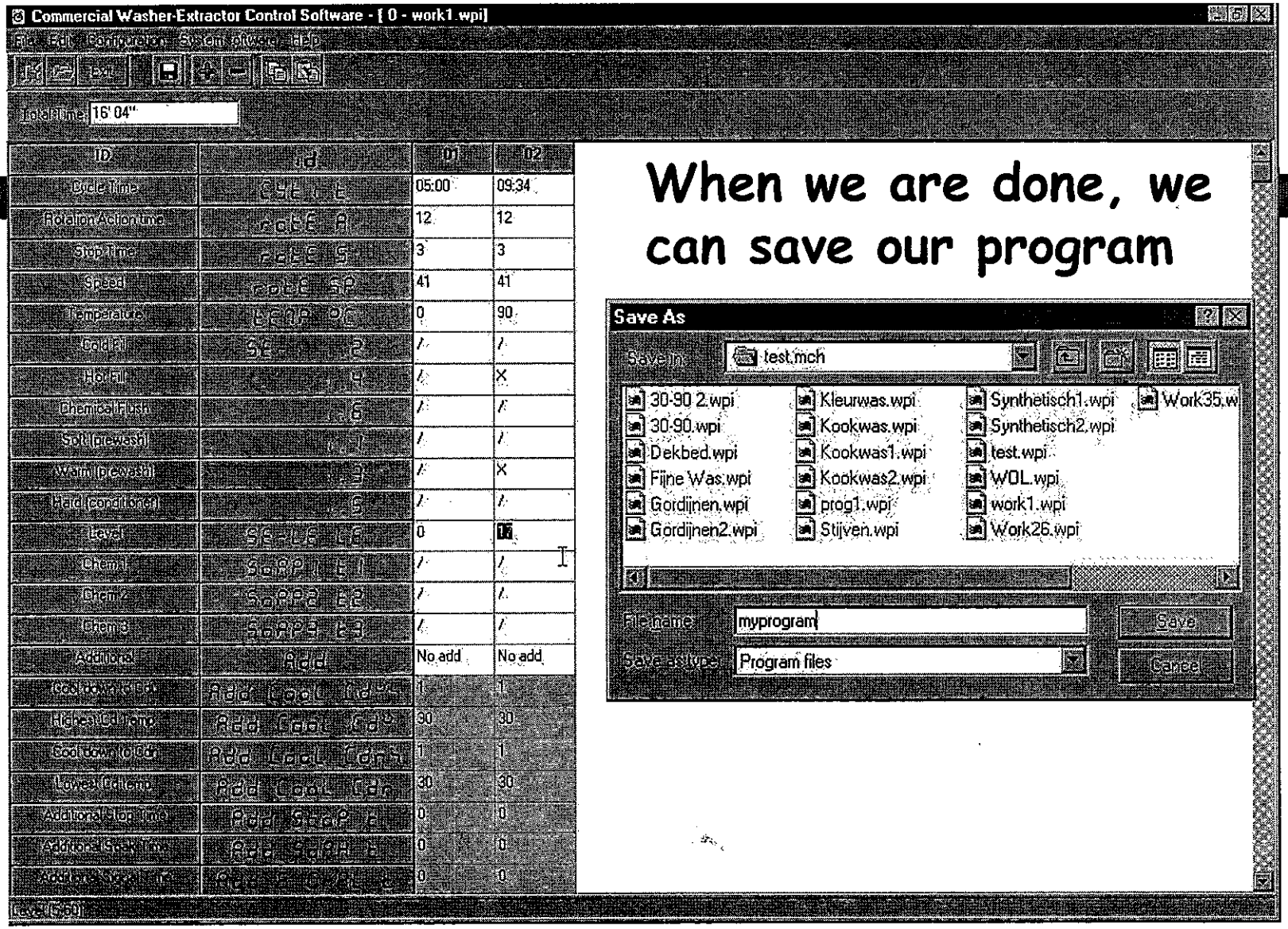


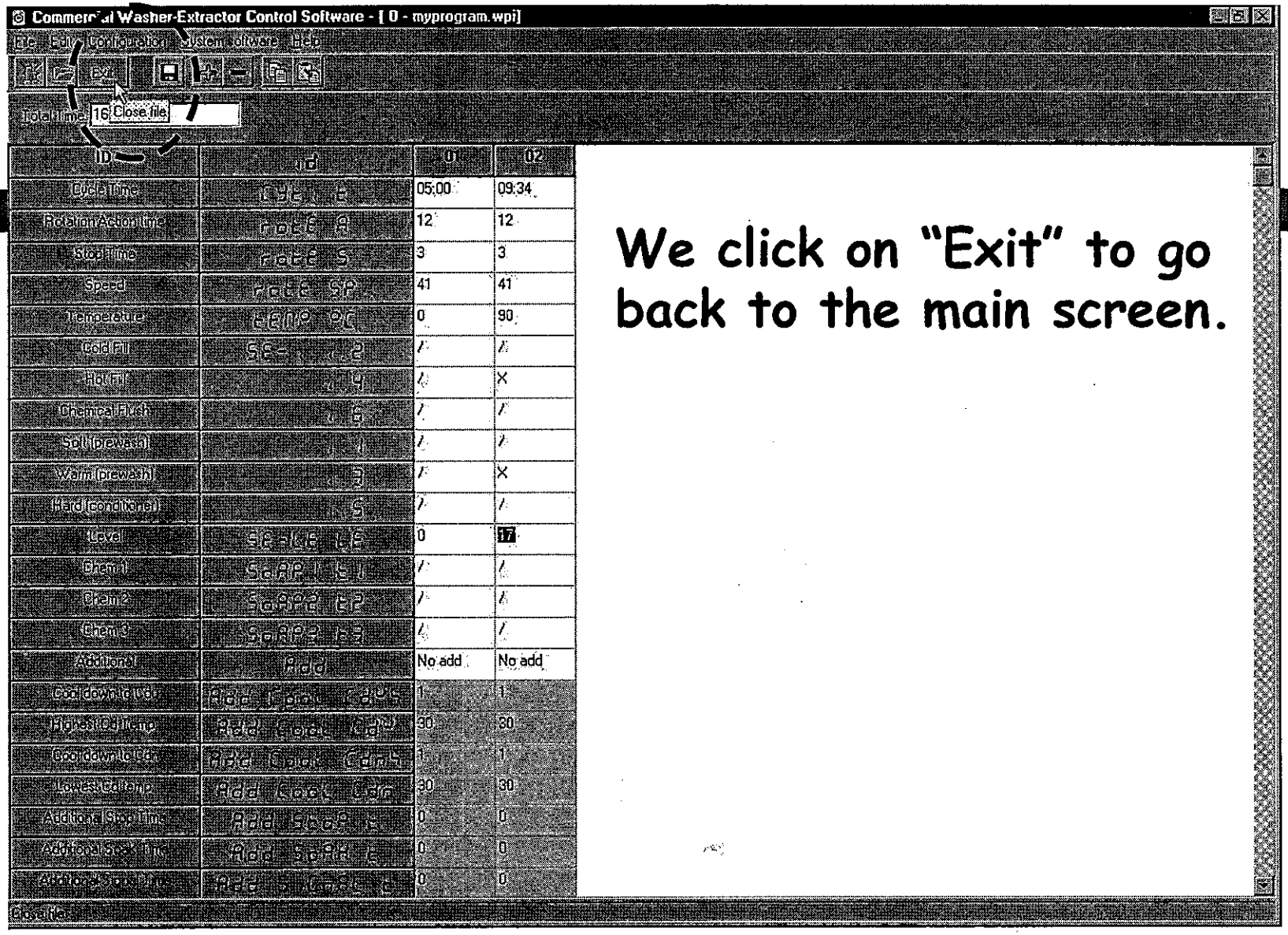
We can add a program step by clicking on the "+" and remove one by clicking on the "-".



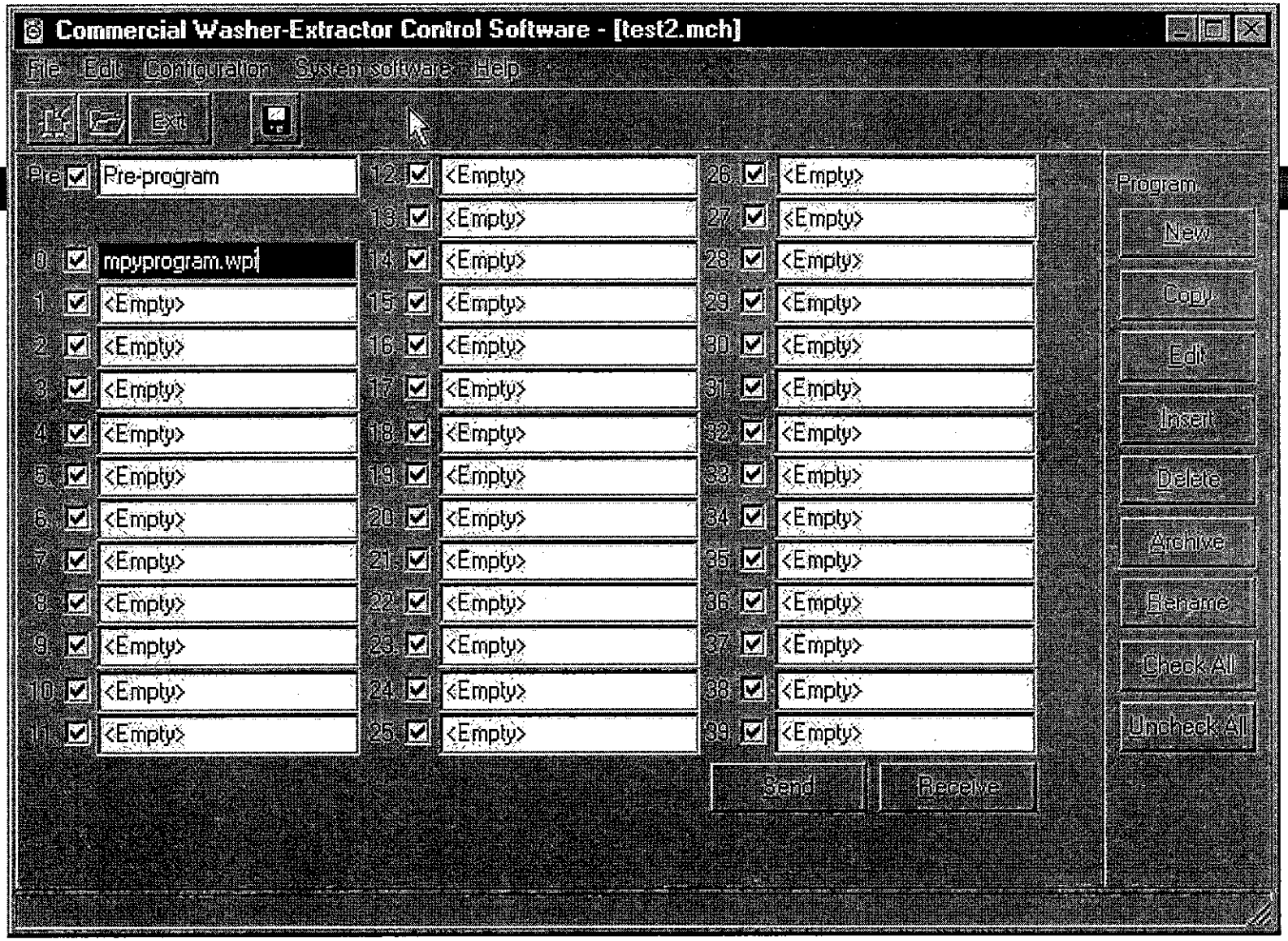
Errors will be high lighted in red.

Example: Temperature was set on 90°C and there was no water level programmed.


Commercial Washer-Extractor Control Software - [0 - work1.wpi]
Total Time: 16' 04"
ID
01
02
Cycle Time
05:00
09:34
Rotation Action time
12
12
Stop Time
3
3
Speed
41
41
Temperature
0
90
Cold Fill
Hot Fill
Chemical Flush
Soil (prewash)
Warm (prewash)
Hard (conditioner)
Level
0
Chem1
Chem2
Chem3
Additional
No add
No add
When we are done, we can save our program
Save As
Save in:
test.mch
30-90 2.wpi
30-90.wpi
Dekbed.wpi
Fijne Was.wpi
Gordijnen.wpi
Gordijnen2.wpi
Kleurwas.wpi
Kookwas.wpi
Kookwas1.wpi
Kookwas2.wpi
prog1.wpi
Stijven.wpi
Synthetisch1.wpi
Synthetisch2.wpi
test.wpi
WOL.wpi
work1.wpi
Work26.wpi
Work35.w
File name:
myprogram
Save as type:
Program files
Save
Cancel



We click on "Exit" to go back to the main screen.


Commercial Washer-Extractor Control Software - [test2.mch]
File Edit Configuration System software Help
Ext
Pre
Pre-program
0
mpyprogram.wpf
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
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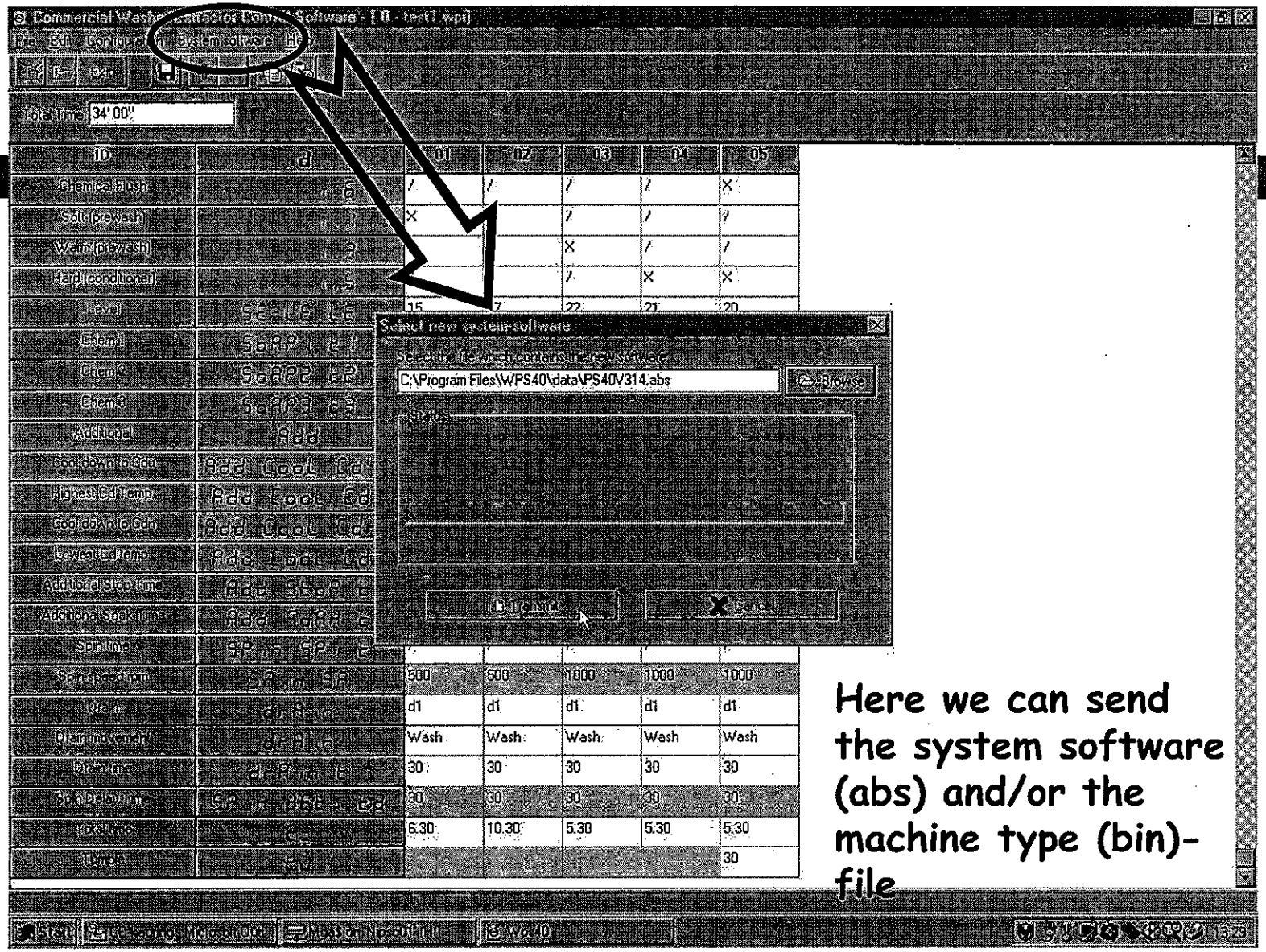
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
<Empty>
Send
Receive
Program
New
Copy
Edit
Insert
Delete
Archive
Rename
Check All
Uncheck All

Installing new system software



ELECTRICAL SYMBOLS LIST WASHER EXTRACTOR

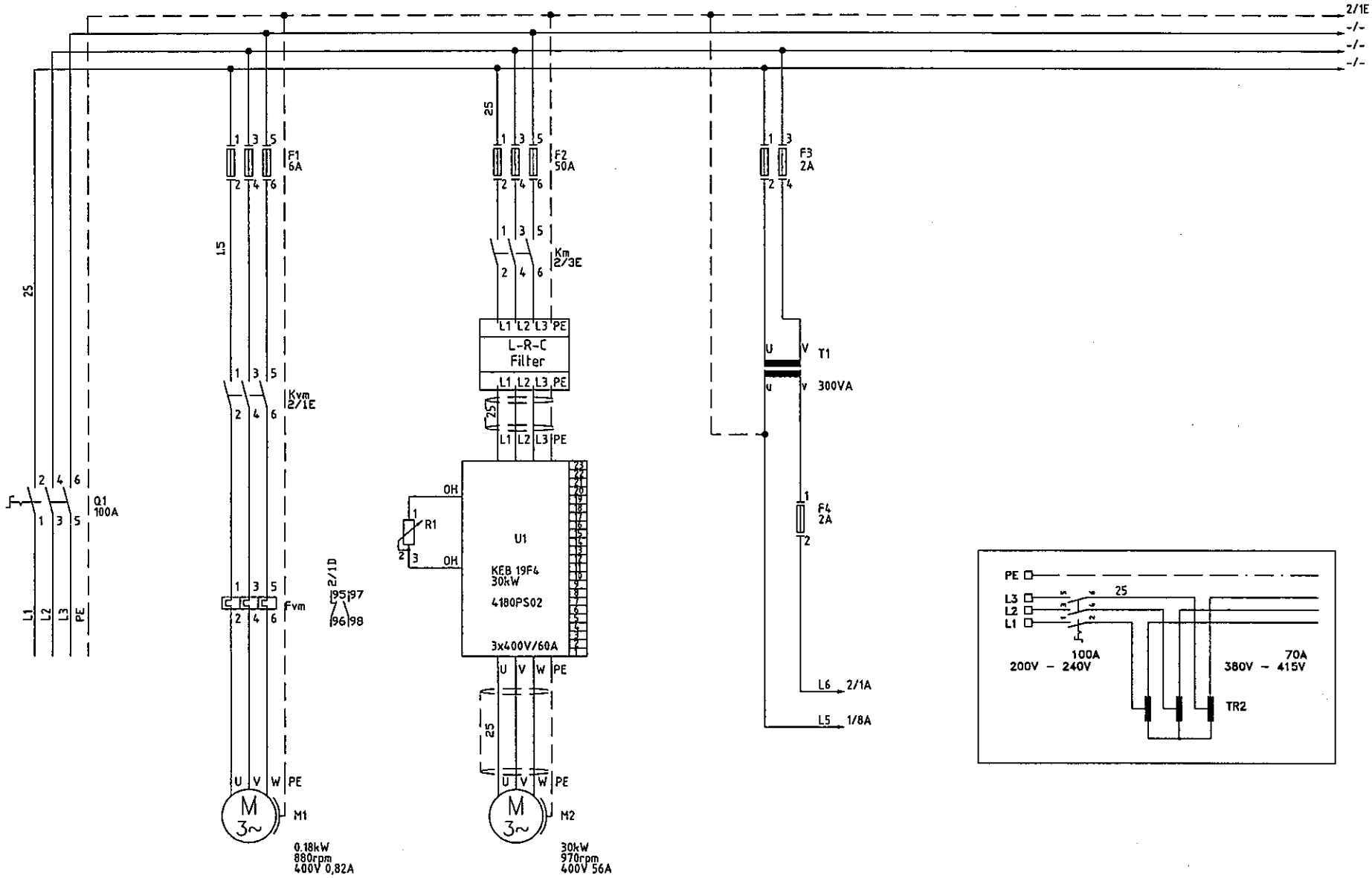
Q1	Main switch
M1	Fan motor
M2	Drive motor
Mpu	Pump motor
MV	Cooling fan control box
F1	Fuses fan motor
F2	Fuses frequency converter
F3	Fuses primary transfo
F4	Fuses secundary transfo
F7	Fuses pump
T1	Transfo control circuit
T2	Transfo main power
Fvm	Overload protection fan motor
Fpu	Overload protection pump motor
Km	Contactor frequency converter
Kvm	Contactor fan
Ko	Speed relay
Kz	Zero speed relay
Kr1 & Kr2 & Kr3	Braking relay
Kr	Brake relay
Kp1 & Kp2	Relay automatic positioning
Kp11 & Kp21	Relay automatic positioning load side
Kp12 & Kp22	Relay automatic positioning unload side
Kd1	Relay loading door
Kd2	Relay unloading door
K2	Relay unloading & loading
KDO	Relay door opening
Kv	Relay pilot light loading/unloading
Yr	Solenoid valve opening brake
Yr' & Yr''	Solenoid valve security brake
Yd1O	Solenoid valve opening loading door
Yd1S	Solenoid valve closing loading door
Yd2O	Solenoid valve opening unloading door
Yd2S	Solenoid valve closing unloading door
Yp1	Solenoid valve product 1
Yp2	Solenoid valve product 2
Yp3	Solenoid valve product 3
Yp4	Solenoid valve product 4
Yp5	Solenoid valve product 5
Yp6	Solenoid valve product 6
Ykhw	Solenoid valve cold hard water
Yksw	Solenoid valve cold soft water
Ywsw	Solenoid valve warm soft water
Yui	Solenoid valve drain
YCD	Solenoid valve Cool down
Yst	Solenoid valve steam

NS1 - NS2	Emergency stop button
Sreset	Push button Reset
Sd1	Limit switch loading door closed
Sd2	Limit switch unloading door closed
Sst1	Push button start automatic positioning loading side
Sst2	Push button start automatic positioning unloading side
Sd1o	Push button opening door load side
Sd2o	Push button opening door unload side
Sp1	Proximity cell automatic positioning load side
Sp2	Proximity cell automatic positioning unload side
Sr	Limit switch brake
Ss	Limit switch out of balance
S2	Switch washing - loading & unloading
Sw	Push button washing
Spr	Programming switch
H1 - H2	Pilot light electric power
Hreset	Pilot light RESET button
Hla	Pilot light loading
Hlo	Pilot light unloading
Hstop	Pilot light end of cycle
Hst1	Pilot light positioning loading side
Hst2	Pilot light positioning unloading side
SxR	Security pressure switch band brake

TILTING VERSIONS

Md	Motor door opening
Kmd1	Contactor door open
Kmd2	Contactor door closed
F5	Fuses motor door opening
Fmd	Overload protection door motor
Sd1o-Sd2o	Limit switch door open
Sd1s-Sd2s	Limit switch door closed
S10-S20	Reed contact doorlock open
Sd10-Sd20	Switch opening or closing door
Sti	Switch tilting machine
Sk+	Limit switch tilting forwards
Sk-	Limit switch machine horizontal
Swr & Swr'	Push button rotating drum right
Kt1	Timer closing door
Kd	Relay door lock
Kk+	Relay machine tilted
Kk-	Relay machine horizontal
Kh	Relay machine horizontal
Kf	Relay machine tilted forwards
Kbc	Relay reed contacts air cylinders B
Kfc	Relay reed contacts air cylinders F
Sb-	Limit switch machine horizontal rear side

Sf-	Limit switch machine horizontal front side
Sbc & Sbc'	Reed contacts air cylinders B
Sfc & Sfc'	Reed contacts air cylinders F
Yk+	Air valve tilting
Yk-	Air valve horizontal
Xk+	Sliding valve tilting
Xk-	Sliding valve horizontal
Ybc	Air valve air cylinder B closed
Ybo	Air valve air cylinder B open
Yfc	Air valve air cylinder F closed
Yfo	Air valve air cylinder F open
Xb	Sliding valve air cylinders rear side
Xf	Sliding valve air cylinders front side
R	Pressure regulator Tilting
V	Pressure security valve
K & K'	Air cushions
B & B'	Air cylinders locking rotation point rear side
F & F'	Air cylinders locking rotation point front side



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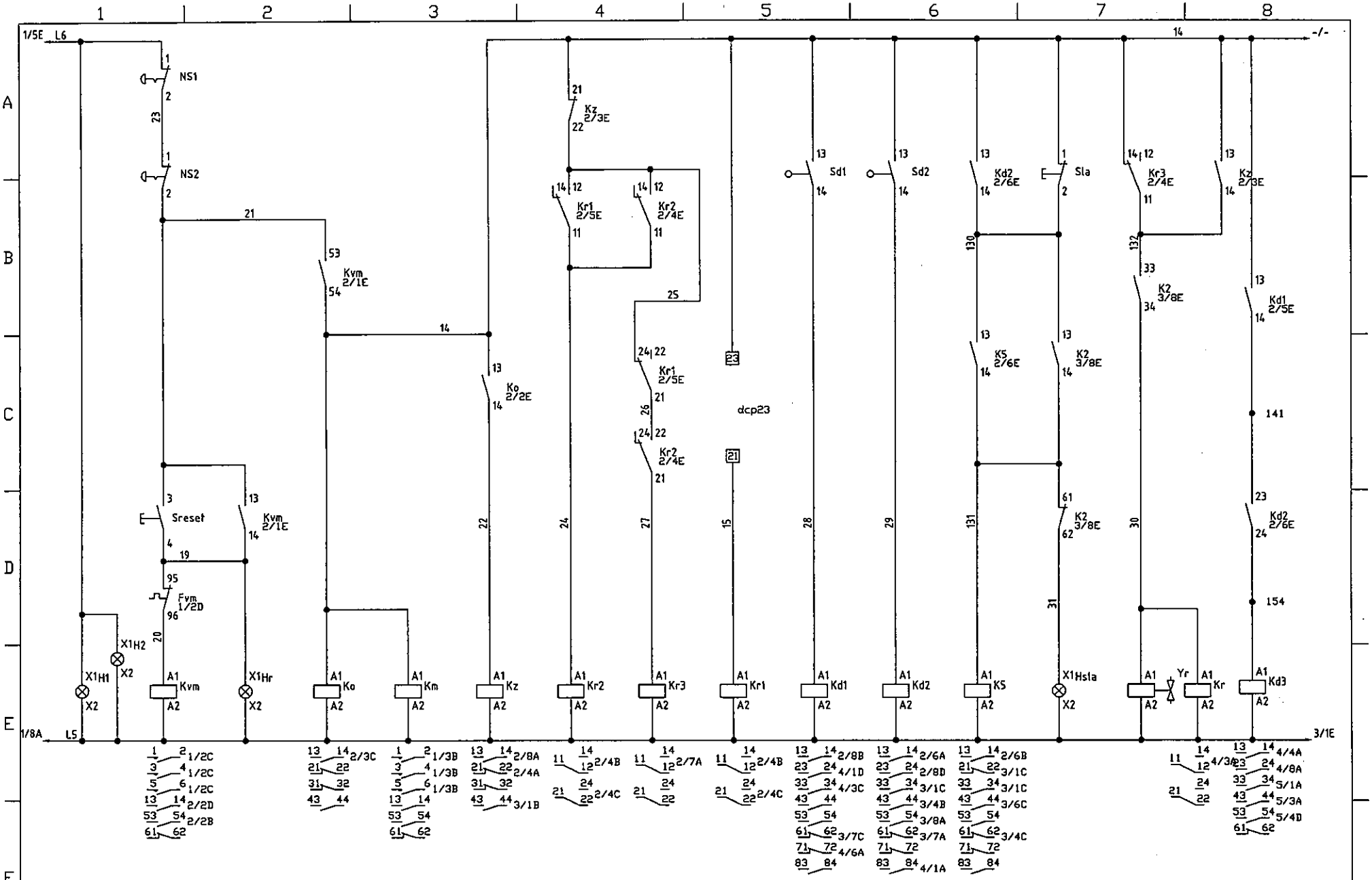
	/ /			HDH					
	/ /								
Issue Code	Date	Name		20/01/2004	08/03/2004			3x400V	1/7



Issue Code	Date	Name			
	/ /			25/10/2001	HDH
	/ /				
	/ /				
				25/10/2001	08/03/2004

WE 2050 SP

FRONTALEX 2050

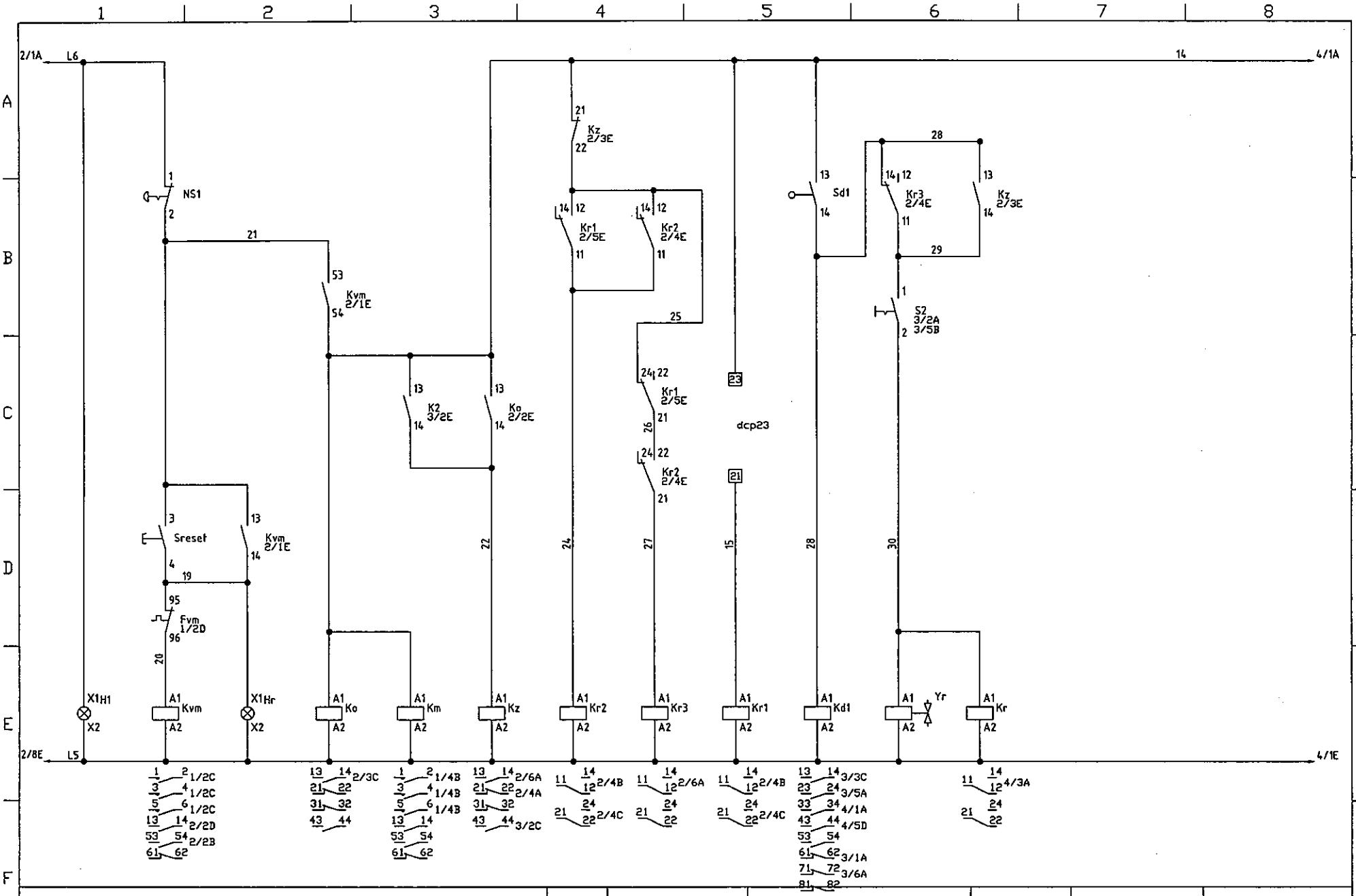
D'HOOGE NV
B 9050 GENT

21115B

3x400V

=DFS
+DFZ

2/7



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	/ /			HDH					+DFZ
	/ /								
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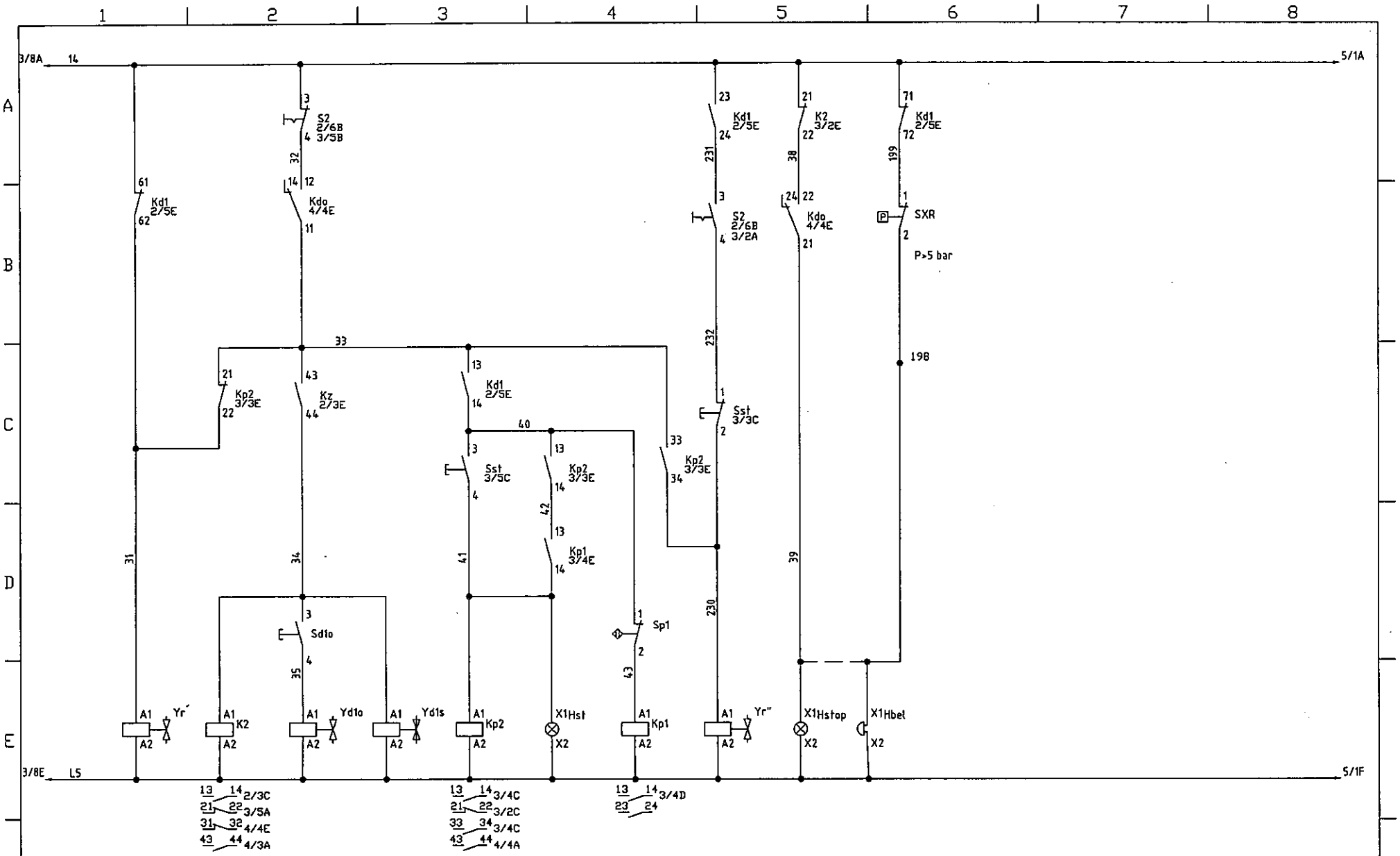

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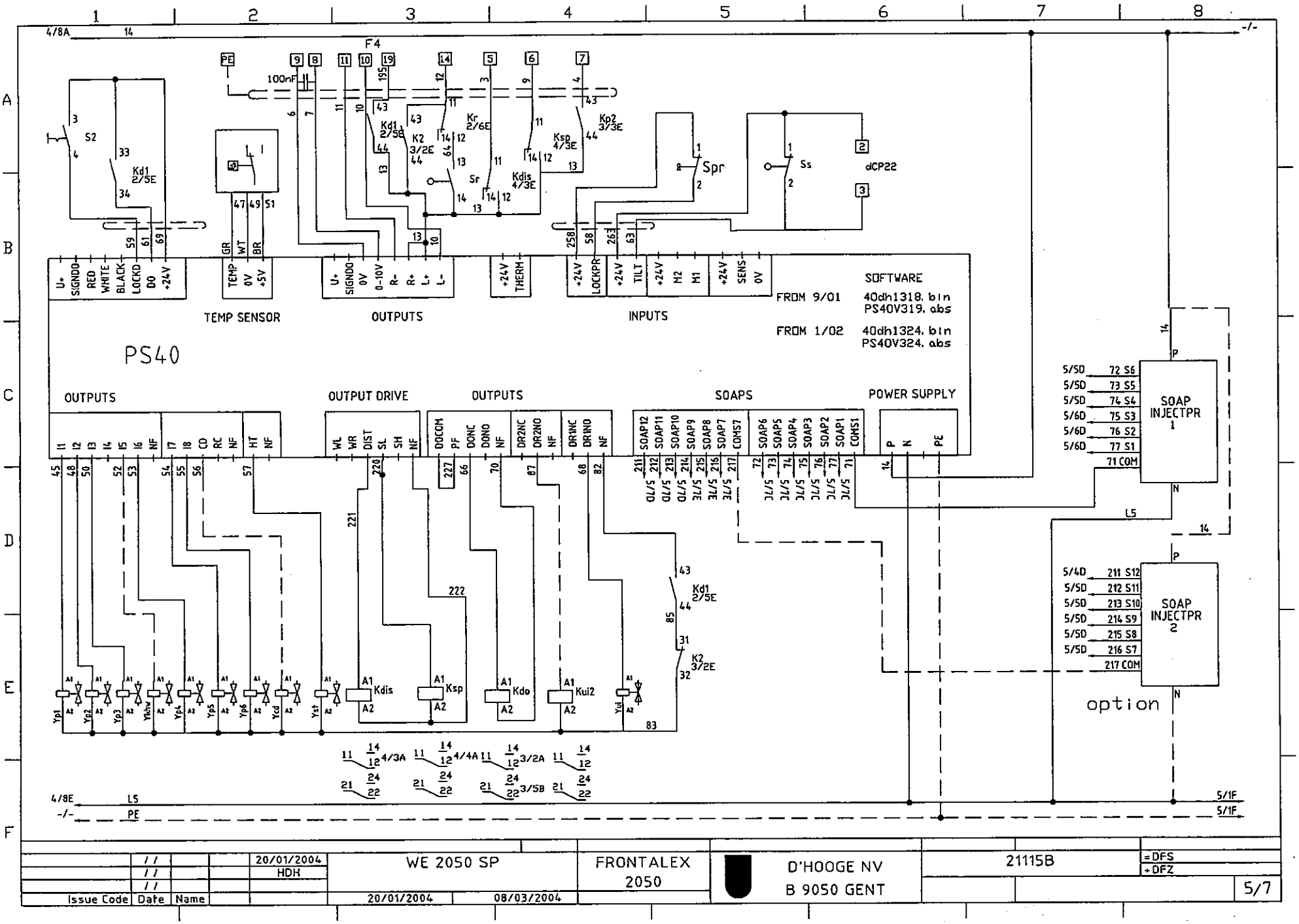
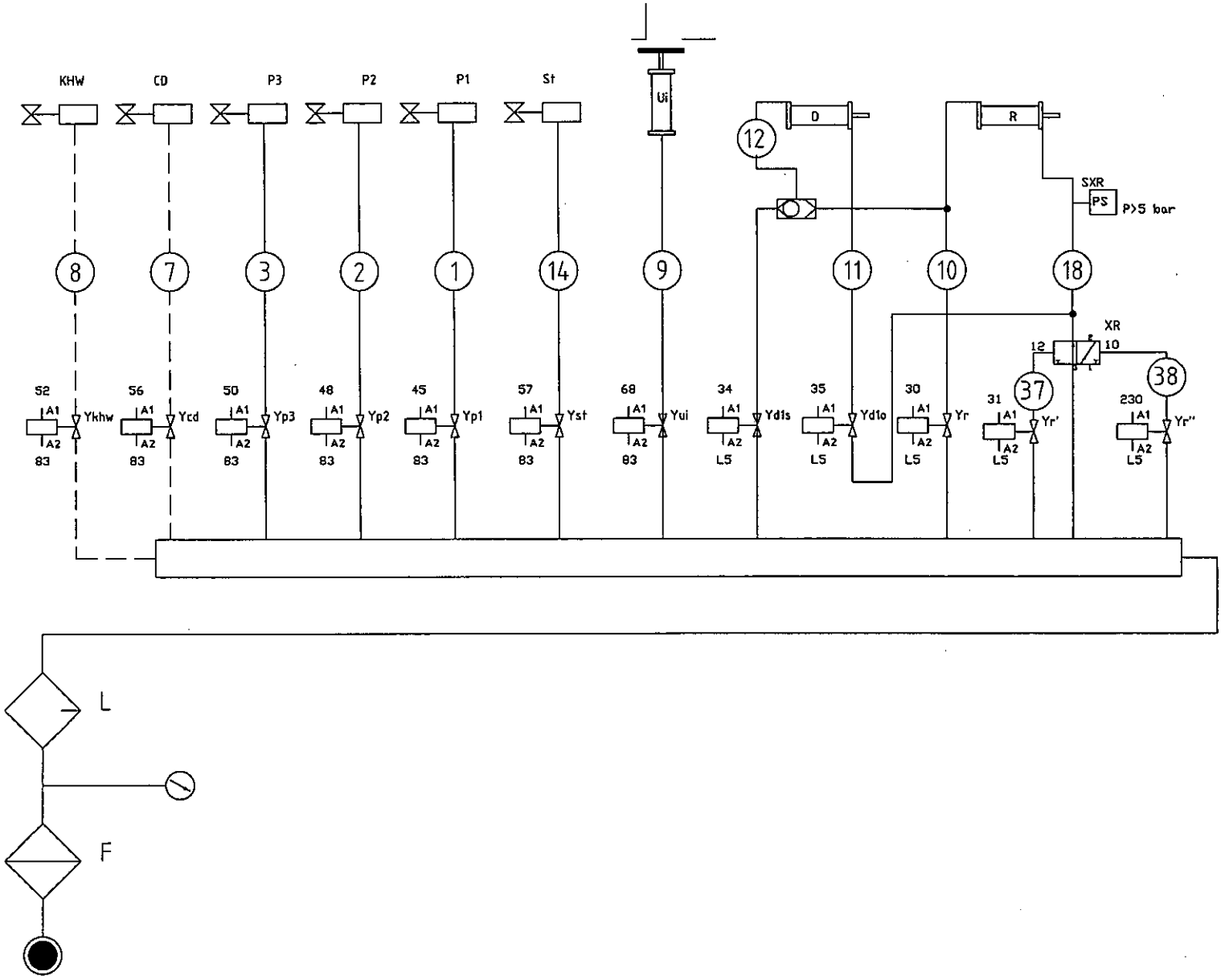
	/ /			HDH				=DFS +DFZ
	/ /				20/01/2004 08/03/2004			3x400V 4/7


PS40
TEMP SENSOR
OUTPUTS
INPUTS
SOFTWARE
FROM 9/01 40dh1318.bin PS40V319.abs
FROM 1/02 40dh1324.bin PS40V324.abs
OUTPUTS
OUTPUT DRIVE
OUTPUTS
SOAPS
POWER SUPPLY
SOAP INJECTPR 1
SOAP INJECTPR 2
option
Kdis
Ksp
Kdo
Kui2
Kd1 2/5E
K2 3/2E
Kr 2/6E
Ksp 4/3E
Kp2 3/3E
Kdis 4/3E
Sr
Spr
Ss
dCP22
FRONTALEX 2050
WE 2050 SP
D'HOOGE NV B 9050 GENT
21115B
20/01/2004
HDH
08/03/2004
5/7



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	/ /			HDH					
	/ /								
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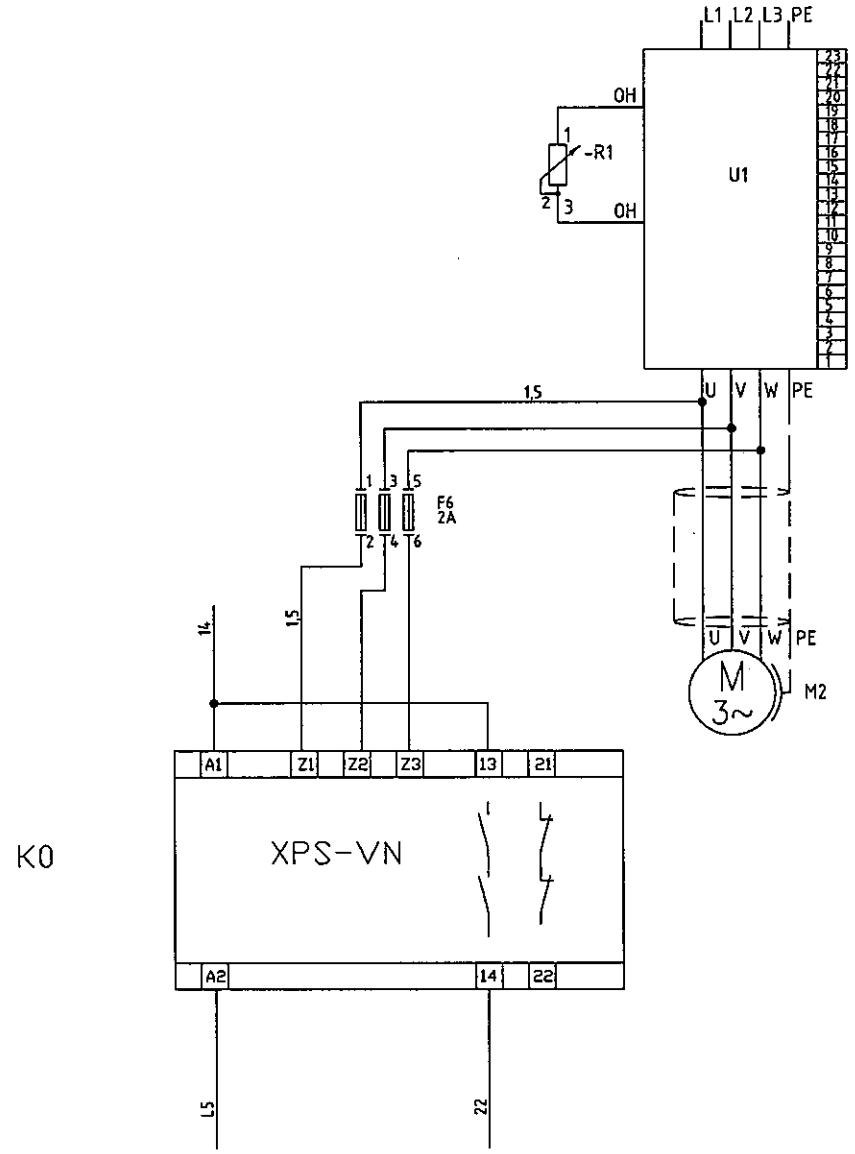

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	/ /			HDH					
	/ /								
Issue Code	Date	Name			20/01/2004	08/03/2004			6/7

ELECTRICAL OPERATION WE1300-2050-2910 HSP WITH FREQUENCY CONVERTER

This machine is equipped with one motor with external cooling controlled by a frequency converter installed in the control box.

The different parameters in the frequency converter are specific for the machine and the used motor.

Only same make and type of motor will function trouble-free together with the installed frequency converter.

A new frequency converter has to be programmed with the specific parameter setting using a PC connected to the serial interface on the converter.

For more details about the frequency see the special pages here included.

ZERO SPEED

The zero-speed is an electronic safety component that detects the voltage in the feeding cable of the drive motor and in this way the rotation of the drum.
Contacts of the relay Ko (or Kz) control the brake, loading and unloading cycle and the opening of the door.

DRAIN VALVE

The normally open drain valve is closed with compressed air and opens by the pressure of a spring. The air-cylinder of the drain valve is controlled by a normally open solenoid 3-way valve Yui ; the 3-way valve is controlled by the output of the PS40.

BRAKE

On the hygienic machine the band brake is installed on the bottom shaft at the unloading side.
The brake is actuated by a double acting spring return air cylinder. This cylinder is controlled by a normal closed solenoid 3-way air valve Yr and a sliding valve XR.

The brake is kept open during the washing, drain speed and extraction.

When the drum turns at extraction speed and the contact DCP23 closes, the braking circuit with Kr1, Kr2 and Kr3 will be activated.
A limit switch Sr fitted on the brake makes it impossible that the machine runs with a closed brake.
By opening the outer door, compressed air is supplied to the brake cylinder through the valve Yr' and XR to increase the braking force during loading and unloading.
The solenoid valve Yr" returns the valve XR back to the closed position.

DISENGAGING SYSTEM FOR UNEQUAL LOAD PARTITION

The movement of the machine is controlled by a sensitive switch Ss. The normally closed contact of this switch is connected in series with the PS40 print.

When the movement during the extraction becomes excessive, the contact Ss opens, the extraction switches-off and the machine is braked completely. The machine will restart automatically, depending on the number of the programmed restarts (1 up to 15) in the PS40.

INCHING

Inching of inner drum in order to bring the inner drum in the right position happens with closed outer door on the lowest programmed speed of the frequency converter. The drum rotation is stopped by the proximity cell on the pulley. One cell on the pulley loading side and one cell on the pulley on the unloading side.

OUTER DOOR

The outer door is tighten by a rubber gasket supported in a stainless steel housing.

The outer door is hinged on a pivot which turns into bronze bearings and rest on a ball-thrust bearing which ensures a smooth and easy motion.

The tightness of the outer door can be improved by adjusting the position of the lock.

The locking of the door occurs by a double acting cylinder with built-in spring (No 235400.14).

During washing the outer door is locked by the normally open 3-way valve Yd1S. After switching over to the load/unload cycle, the air-pressure is released but the door is kept closed by the built-in spring. By pushing the button "Door" Sd1O is energised so that the door is liberated and opens.

The doors are locked against each other. Once the unloading door opened all controls on loading side are blocked and vice versa.

PRINCIPLE PS40 WITH FREQUENCY INVERTER

The frequency converter is programmed in the factory, the parameters are different for each machine type.

In the **"CP mode"** the parameters are only used to verify, it's possible to change some of the parameters, but only parameters in the washing group will be influenced.
The important CP parameters are:
CP1 : Actual frequency display
CP2 : Inverter status display
CP3 : Actual load (in %)
CP4 : Peak load (in %)

To have the possibility to verify the parameters, one must enter the **"Application mode"**, it is not possible to enter it without **"Password"**

The following groups exist:

Group 0 : Washing speed
The washins speed can be programmed between 40 et 100 %
100 % corresponds with 50 RPM
Analogue signal comes from PS40 (0-10VDC, 10VDC = 100%)
Frequency inside the inverter will vary between **0 and +/- 9Hz**

Group 1 : Distribution speed
Fixed speed: +/- 65 RPM corresponds with **12 to 14 Hz**

Group 3 : Spinning speed
It's possible to program the spinning (extraction) speed up to 100 %.
100 % corresponds with the maximum spinning speed that is written on the fabrication plate.
Analogue signal comes from PS40 (0-10VDC)
Frequency inside the inverter will vary between **0 and +/- 180Hz**

Group 4 : Positionning speed
Fixed speed: +/- 5 RPM corresponds with **1 to 1,5 Hz**

The terminals of the inverter:
14 : Tension 15VDC
19 : Control release
10 : Rotation to the left
11 : Rotation to the right

WE 570	WE 570 H WE 1250 (H)	WE 1300 (H)SP WE 2050 (H)SP WE 2910 (H)SP	
	4	5	In the distribution cycle DIS on the PS40 is engaged, the contact between 14 and 5 is closed, by this group 1 will be selected.
4	5	6	In the spinning cycle the relais DIS and SPL are engaged, group 3 will be selected.
	6	7	In the positioning cycle the relay (Kp...) is engaged and group 4 will be selected.

COMBIVERT

F4 - C

GB

This instruction manual must be made available to any user. Before working with this unit the user must be familiarized with it. This is especially true for the attention, safetv and warning guides. The meaning of the pictograms used in this manual are :

Page

Danger
Warning
Caution

Attention,
Observe at
All costs

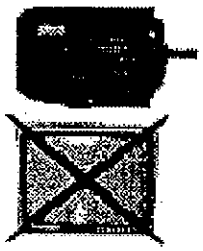
Information
Help
Tip

TABLE OF CONTENTS

1. GENERAL - KEB

1.1 Product Description

In selecting the KEB COMBIVERT you have chosen a frequency inverter with the highest demands for quality and dynamic.



It exclusively serves for a stepless speed regulation of the three-phase motor.

The operation of other electrical loads is forbidden and can lead to disturbances of the unit.

This instruction manual describes the standard series of COMBIVERT **F4-Small** and **F4-Compact** in the range :

- **230V-class of .37kW ... 2.2kW**
- **400V-class of 0.75kW ... 30kW**

So that a simple operation and starting of KEB COMBIVERT F4 is possible, in spite of the extensive programming possibilities, we developed a special operating level in which the most important parameters are combined. If the pre-defined parameters are not sufficient to solve your application, then you can purchase a application handbook for a small fee (only for Compact-Version Part-No. 00.F4.OEA-K100).

It covers :
- producing an individual operating level
- listing and description of all parameters
- application examples
- parameter definition for the adjustment of an individual communication program

The definition of our own operator level provides maximum on functions with a minimum on documentation.

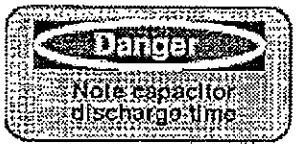
The KEB COMBIVERT is only conditionally short-circuit proof (VDE 0160). After resetting the internal protector the function as directed is guaranteed.

Exceptions :
- If an earth-leakage fault or short-circuit often occur, then this can lead to a defect in the unit
- If a short-circuit occurs during regenerative operation (2^{nd} or 4^{th} quadrant, feedback into the intermediate circuit), then this can lead to a defect in the unit.

2. Safety Instructions

The KEB COMBIVERT is operated with voltage and coming into contact with it can cause an extremely dangerous current stroke. The installation of the unit as well as the available accessories, is only permissible by qualified electro-personnel. A safe and trouble-free operation is only possible when the valid regulations are followed according to DIN VDE 0100, EN 60204-1, EN 55014, EN 50082-2 as well as relevant regulations for your area.

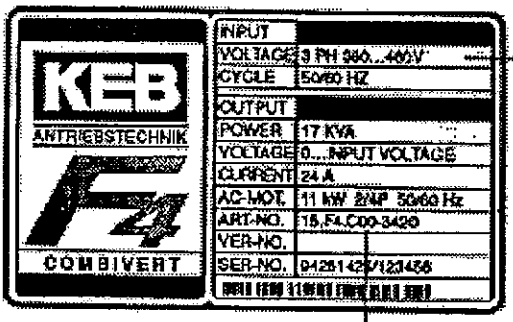
After clearing the frequency inverter the intermediate circuit capacitors are still charged with high voltage for a short period of time. The unit can be worked on again after it has been switched off 5 minutes.



KEB COMBIVERT is adjusted so that after a voltage breakdown or an UP-error it restart alone. The machine manufacturer is responsible for the corresponding safety precautions.

2. INSTALLATION AND CONNECTION - KEB

2.1 Determining the Size of the unit



Voltage class

15. F4. C00-3420

Control circuit type
C = Compact
S = Small

Inverter size

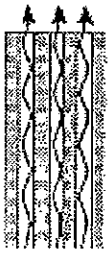
Inverter type

2.2 Installation Instructions

IP20

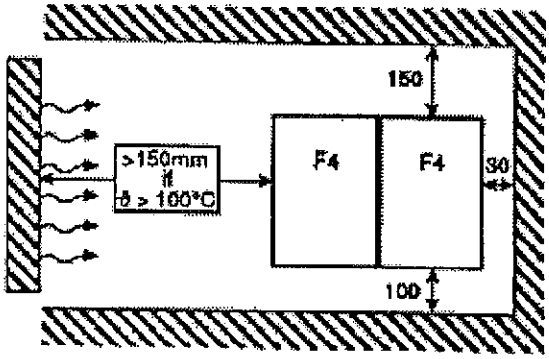
Type of protection

Direction of the cooling fins



Inverter without cooling
Fan only install vertically !

Minimum clearance in mm



Allow room for the options (e.g. braking resistance, braking module, radio interference voltage filter etc.) already during the planning stage of a machine.

Transport-/
Storage temperature

Max +70 °C

Min –25°C

Cooling agent inlet
Temperatur/
Ambient temperature
During operation

Max +70 °C

Min –25°C

2.3 Connection Instruction

A trouble-free and safe operation of the frequency inverter is only guaranteed when the connection instructions below are strictly followed. When deviated from, malfuctions and damages may occur in isolated cases.

- KEB COMBIVERT is only determined for a fixed connection (discharge current > 3.5 mA)
- Protective conductor cross section must be at least 10mm² copper or a 2nd conductor must be electrically parallel to the protective conductor on separate terminals (VDE 0160)
- Install electric power cable and control cable separately
- Do not connect/disconnect the electric power cable and control cable when the frequency inverter is energized.
- Note mains voltage and motor rated voltage
- Use shielded/drilled control lines. Shield on PE
- Connection of the control cables is only possible on switch and adjustment elements (relay, switch, potentiometer), which are suited for low voltages ;
- Use shielded motor cables. Lay extensive shield on the motor housing.
- Connection of the braking module/braking module/braking resistor with shielded/drilled cable.
- Ground frequency inverter (asteroid ; avoid earth circuits ; shortest connection to main earth).

All control wires should be included in further protective precaution (e.g. doubly insulated or shielded, grounded and insulated), since this deals with voltages according to VDE 0160, which are ot securely separated from the mains circuit, because basic insulation is used.

2.4 Fault Current-Protective Switch (FI)

Standard (pulse-current sensitive) FI-protective switches can only be used conditionally together with frequency inverters. Frequency inverters with 3-phase input voltage can prevent the triggering of an FI-protective switch during a ground fault due to a steady component in fault current. Therefore, according to VDE 0160 an FI-protective switch is not permissible as the sole protective precaution. Dependent on the available mains form (TN, IT, TT) further protective precaution according to VDE 0100 part 410 are necessary. For example, with TN-mains it is protection trough overcurrent protective devices, with IT-mains it is insulation monitoring with pulse-code measurin method. ith all mains forms a protective separation can be used, as long as the required power and cable lengths permit this. The following measures must be taken into account when selecting the F protective switch.

- The standard-FI protective switch must correspond to the new form of contruction accordin to VDE 0664.
- The tripping current should be 300mA or more, in order to prevent a premature triggering o the inverter by discharge currents (about 200mA). Dependent on the load, the length of the motor cable and the use of a radio interference filter substantially higher leakage currents ca occur.

A sole protection with the standard FI-protective switch is permissible for frequency inverters with 1-phase input voltage (L,N), when they correspond to the new form of construction according to DIN VDE 0664.

Universal mains sensitive FI-protective switches offer an extensive protection and are permissible as the sole protective measure with 1 and 3-phase frequency inverters. The connection instructions of the respective manufacturer must be considered.

2.5 Insulation Measurements

In order to prevent damaging the KEB COMBIVERT, the insulation measurements can only be carried out in observance of important test conditions (see VDE 0558). The in/ouput of KEB COMBIVERT must be disconnected before insulation measurements of the unit are taken.

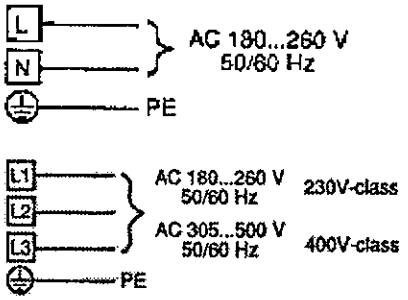
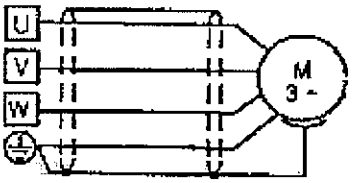
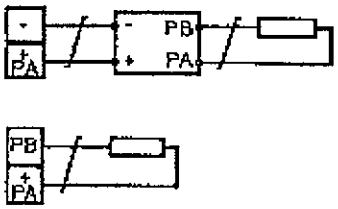
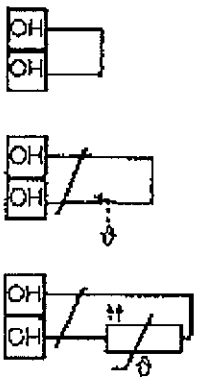
2.6 Connection of the Power Circuit

Dependent on the unit ordered, the following power circuit terminals exist.

Interchanging the mains and motor connection leads to immediate destruction

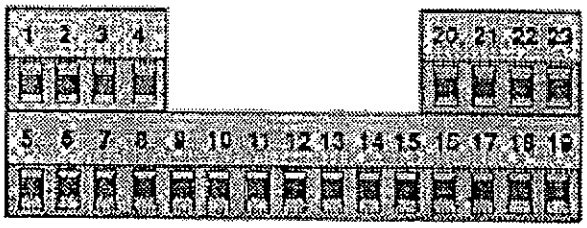
With the lengths > 15m overvoltage can occur in the motor, which can endager the insulation system (if necessary ask for the info "Motor line length" 00..F4.200-1001)

Never directly connect the braking resistance on the terminals « , » and « **+/PA** »

Mains Connection 1-phase (only 230V-class) 3-phase (230V-/and 400V-class)	
Motor Connection **Observe the connecting voltage and the correct polarity of the motor**	
Braking option (dependent on the unit) Connection for the braking Module Connection for the brake resistor (at internal brake chopper)	
Temperature monitoring (alternatively) Bridge, when no monitoring occurs Thermojunction (opening contact) Temperature sensor (PTC)	

2.7 Control circuit Version C

Size 05 ... 12



2.7.1 Assignment of Terminal Strip X1

From size 13

PIN	Abbr.	Function	Description
X1.1 X1.2 X1.3	RLA RLB RLC	NO contact Opening contact Switching contact	Relay output Function see parameter CP.22 (factory setting : fault indication)
X1.4 X1.5	I1 I2	Fixed frequency 1 Fixed frequency 2	X1.4 + X1.5 = fixed frequency 3 No input = analog set value
X1.6	I3	DC-braking	Activates the dc-braking
X1.7	I4	Energy saving funct.	Output voltage is reduced to 70%
X1.8 X1.9	REF+ REF-	Difference voltage Input	Voltage difference is added to/subtracted from REF (X1.17)
X1.10 X1.11	FOR REV	Forward Reverse	Preset rotation ; forward has priority
X1.12	OUT1	Frequency depend. Switch	Transistor output switches at $f_{real} = f_{set}$
X1.13 X1.14	OV Uext	Mass 15V	Potential for digital in-/ouputs Voltage supply for digital in-/outputs
X1.15	AN- OUT	Analog output	Analog output of the real frequency 0 ... 10 VDC + 0 ... 100 Hz
X1.16 X1.17 X1.18	CRF REF COM	+10V Set value input Common	Supply voltage for set value potentiometer Factory setting 0...10V (0...20mA and 4...20mA adjustable with CP.24 Mass for analog in-an ouputs
X1.19	ST	Control release	Power modules are enabled
X1.20	RST	Reset	Hardware reset ; only possible when an error occurs
X1.21 X1.22 X1.23	FLA FLB FLC	NO contact Opening contact Switching contact	Relay output ; switches, when level from parameter CP.23 is reached (frequency dependent switch)

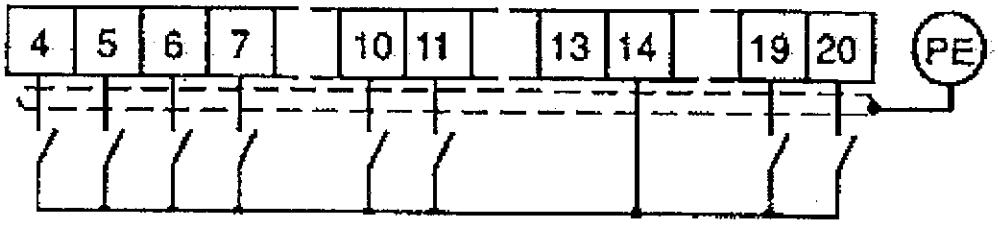
2.7.2 Connection of the Control

In order to prevent a malfunction caused by interference voltage supply on the control inputs, the following

- Use shielded/drilled cables
- Lay shield **on one side** of the inverter onto earth potential
- Lay control and power cable **separately** (about 10 ... 20 cm apart)
- Lay crossings in a right angle (in case it cannot be prevented

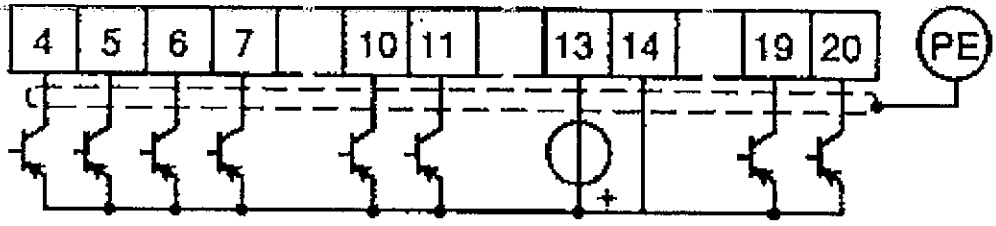
2.7.3 Digital Inputs

Use of internal voltage supply

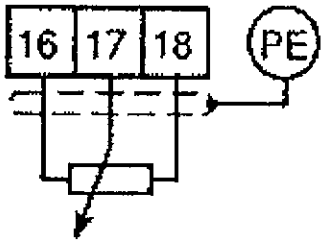


2.7.4 Analog Inputs

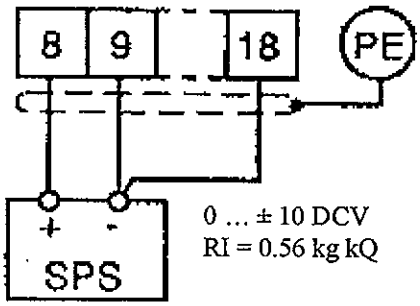
Use of external voltage supply



Internal analog set-point
Setting 0 ... 10V

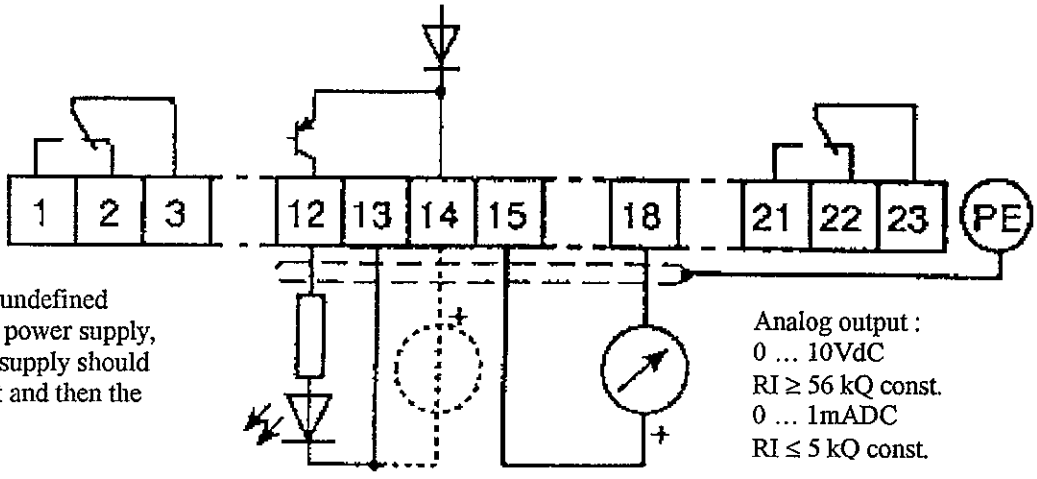


External
Set-point setting



0 ... ± 10 DCV
RI = 0.56 kg kQ

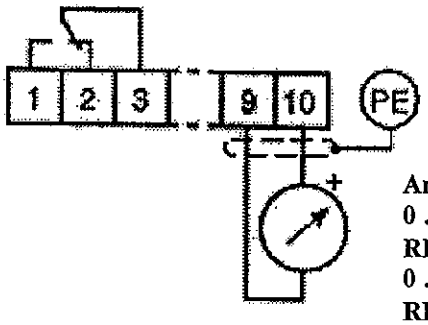
2.7.5 Outputs



Analog output :
0 ... 10VdC
RI ≥ 56 kQ const.
0 ... 1mADC
RI ≤ 5 kQ const.

In order to prevent undefined conditions external power supply, the external power supply should be switched on first and then the inverter

2.8.5 Outputs



Analog output :
0 ... 10VDC at
RI ≥ 56 KQ const.
0 ... 1m ADC at
RI ≤ 5 KQ const .

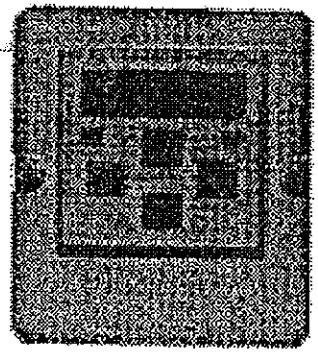
3. Operation of the Unit

As an accessory to the local operation an operator is enclosed with the frequency inverter COMBIVERT F4 at standard delivery. To prevent malfunctions, the inverter must be brought into ***nOP*** status before connecting/disconnecting the operator (open control release terminal X1.19 ***C-Version/X1.14 S-Version).*** When starting the inverter without an operator, it is started with the last stored values or factory setting. The operator is obtainable in two versions :

3.1 Basic operator (standard)

Part-No. 00.F4.010-2009

5-digit LED Display



Interface control
Transmit « LED flickers »

Operating-/Error display
Normal « LED on »
Error »LED blinks »

Double function keyboard

3.1.1 Interface operator (optional)

Part-No. 00.F4.010-1009

In the Interface operator there is an additionally isolated RS232/RS485-Interface integrated.

PE-Connection  RS232/RS485

PIN No.	RS485 Ref./Norm	Signal	Meaning
1	-	-	Reserved
2	-	TxD	Transmitter signal/RS232
3	-	RxD	Receiver signal/RS232
4	A'	RxD-A	Receiver signal A/RS485
5	B'	RxD-B	Receiver signal B/RS485
6	-	VP	Voltage supply-Plus + 5V (I_{max} = 50mA))
7	C/C'	DGND	Data reference potential
8	A	TxD-A	Transmitter signal A/RS485
9	B	TxD-B	Transmitter signal B/RS485

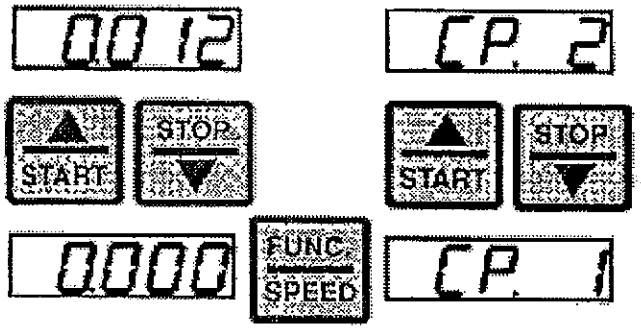
3. OPERATION OF THE UNIT – KEB

3.1.2 Keyboard

When switching on KEB COMBIVERT the value of parameter CP.1 appears.
(See Drive mode to switch the keyboard function)

With **UP** (■) and **DOWN** (○) the value of the parameter number is increased/decreased with **changeable** parameters.

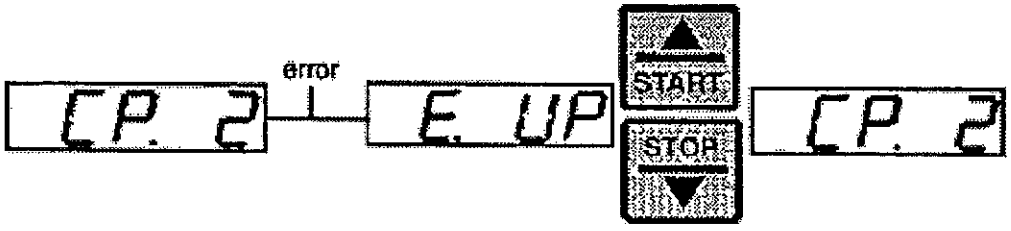
The **function key** (FUNC) changes between the parameter value and parameter number.



Principally during a change, parameter values are immediately accepted and stored non-volatile. With some paramters it is not useful, that the adjusted value immediately be accepted. When this type of parameter is changed, then a point appears behind the last digit.

By pressing **ENTER** the adjusted value is accepted and non-volatile stored.

If a malfunction occurs during operation, then the actual display is overwritten by te alarm message. The alarm message is reset by UP and DOWN.



With UP/DOWN the error message is only reset. In order to reset an error oneself, the cause must be removed and a reset on terminal X1.20 (C-Version)/X1.14 (S-Version) or a power-on reset must occur.

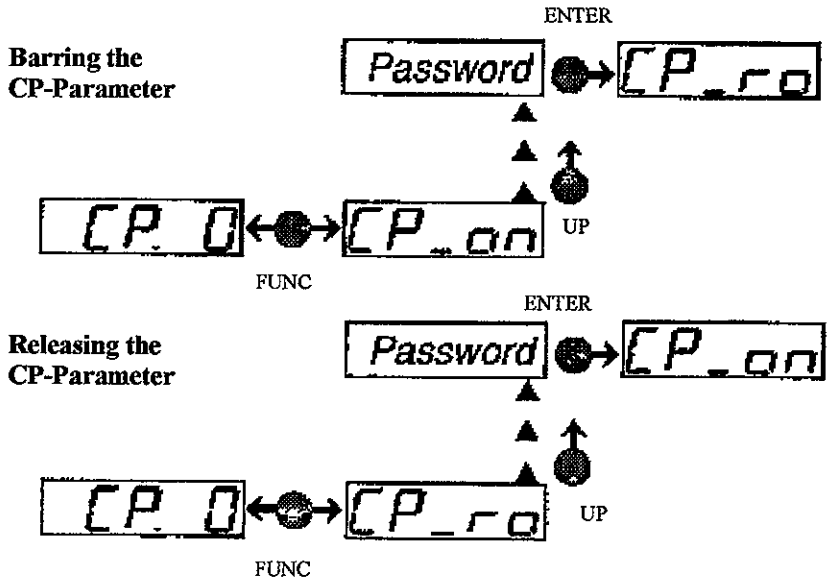
3.2 Parameter Summary

Display	Parameter	Adjust. Range	Resolution	Factory setting
CP.0	Password input	0...9999	1	-
CP.1	Actual frequency display	-	-	-
CP.2	Actual load -	-	-	-
CP.3	Peak load -	-	-	-
CP.4	Acceleration time (right)	0.01...300 s	0.01 s	10 s
CP.5	Acceleration time (left)	0.01...300 s	0.01 s	10 s
CP.6	Deceleration time (right)	0.01...300 s	0.01 s	10 s
CP.7	Deceleration time (left)	0.01...300 s	0.01 s	10 s
CP.8	Boost	0...25.5 %	0.1 %	2 %
CP.9	Minimal frequency	0...409.58 Hz	0.0125 Hz	0 Hz
CP.10	Maximal frequency	0...409.58 Hz	0.0125 Hz	70 Hz
CP.11	Fixed frequency 1	0...409.58 Hz	0.0125 Hz	5 Hz
CP.12	Fixed frequency 2	0...409.58 Hz	0.0125 Hz	50 Hz
CP.13	Fixed frequency 3	0...409.58 Hz	0.0125 Hz	70 Hz
CP.14	Max. ramp current	10...200 %	1 %	190(140)%[1]
CP.15	Max. constant current	10...200%,off	1 %	Off
CP.16	Speed search	Off,1...15	1	8
CP.17	Voltage stabilization	150...649V,off	1 V	Off
CP.18	Slip compensation	-2.50...2.50	0.01	0=off
CP.19	Autoboost	-2.50...2.50	0.01	0=off
CP.20	DC-braking	0...9	1	7
CP.21	Braking time	0...100s	0.01 s	10 s
CP.22	Relay output	0...23	1	2
CP.23	Frequency value	0...409.58 Hz	0.0125 Hz	4 Hz
CP.24[2]	Reference signal	0...2	1	0

[1] up to size 12 (up at size 13) [2] only at C-Version

3.3 Password Input

Ex works the frequency inverter is supplied without password protection, this means that all changeable parameters can be adjusted. After parameterizing the unit can be barred against unauthorized access. The adjusted mode is stored.



3.4 Operating Display

The parameters below serve to control the frequency inverter during operation.

Actual frequency display

Display of the actual output frequency with a resolution of 0.0125 Hz. The rotation of the inverter is indicated by the sign.

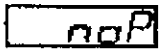
Examples :

Output frequency 18.375 Hz, rotation forward

Output frequency 18.375 Hz, rotation reverse

Inverter status display

The status display shows the actual working conditions of the inverter. Possible displays and their meanings are :



« no Operation » control release (terminal X1.19) not bridged, modulation switched off, output voltage = OV, drive is not controlled

« Low Speed » no rotation preset (terminal X1.10 or X1.11), modulation switched off, output voltage = 0V, drive is not controlled

« Forward Acceleration » drive accelerates with a forward direction of rotation

« Forward Decelaration » drive decelerates with a forward direction of rotation

« Reverse Acceleration » drives accelerates with a reverse direction of rotation

« Reverse Deceleration » drive decelerates with a reverse direction of rotation

« Forward Constant » drive runs with a constant speed and a forward direction of rotation

« Reverse Constant » drive runs with constant speed and a reverse direction of rotation.

Other status messages are described at the parameters, which they cause.
Error messages and their causes are described in Chapter 5.

Actual load

Display of the actual inverter rate of utilization in percent. 100 % rate of utilization is equal to the inverter rated current. Only positive values are displayed, meaning there is no differentiation between motor and regenerative operation.

Peak load

This display makes it possible to recognize short-term fluctuations of the rate of utilization by storing the highest value that occurred. The display occurs in percent (100% = inverter rated current).

With the UP/DOWN key the peak value can be reset when the unit is on. As a result it is possible to measure the highest rate of utilization in certain operating phases. Switching off the unit deletes the peak value.

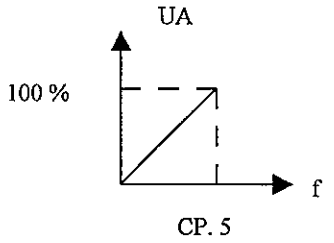
3.5 Basic Adjustment Of the Drive

The following parameters determine the fundamental operating data of the drive . They should be checked and/or adapted to the application.

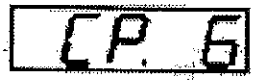
Rated frequency

With the adjusted frequency here the inverter reaches a maximal output voltage.
The adjustment of the motor rated frequency is typical here. Note : at frequencies < 25 Hz and maximum voltage standard motors can overheat !

Adjustment range :	0..409.58 Hz
Resolution :	0.0125 Hz
Factory setting :	50.0 Hz
Customer adjustment :	_____ Hz

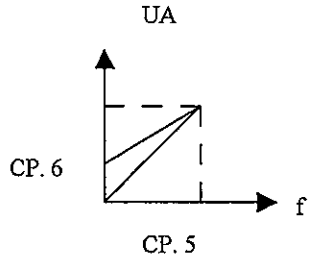


Boost



In the lower speed range a large part of the motor voltage decreases on the stator resistance. In order that the breakdown torque of the motor remains almost constant in the entire speed range, the voltage decrease can be compensated by the boost.

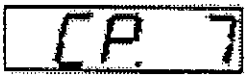
Adjustment range :	0.0025.5 %
Resolution :	0.1 %
Factory setting :	2.0 %
Customer adjustment :	_____ %



Adjustment : - Determine the rate of utilization in no-load operation during rated frequency
- Preset about 10 Hz and adjust the boost, so that about the same rate of utilization is reached as with the rated frequency

When the motor, during continuous operation, drives with low speed and too high voltage it can lead to an overheating of the motor.

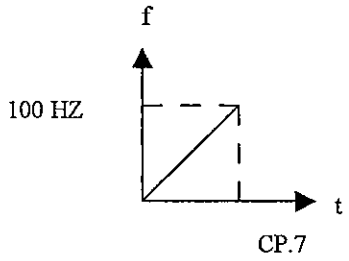
Acceleration time



The parameter determines the time needed, in order to accelerate from 0 to 100 Hz. The actual time is proportional to the frequency change.

$$\frac{100\ \text{Hz}}{\text{CP.7}} = \frac{\text{delta f}}{\text{actual acceleration time}}$$

Adjustment range :	**0.01..300 s**
Resolution :	**0.01 s**
Factory setting :	**10 s**
Customer adjustment :	**_____ s**



Example : CP.7 = 10 s ; the drive should accelerate from 10 Hz to 60 Hz
delta f = 60 Hz – 10 Hz = 50 Hz

Actual acceleration time = (50 Hz/100 Hz) x 10 s = 5 s

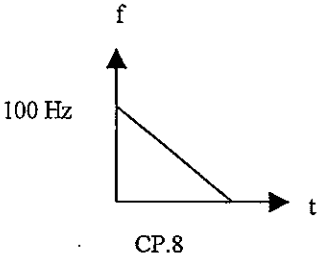
Decceleration time

The parameter determines the time needed in order to decelerate from 100 to 0 Hz. The actual deceleration time is proportional to the frequency change

CP. 8

$$\frac{100\ Hz}{CP.7} = \frac{\text{delta f}}{\text{actual acceleration time}}$$

Adjustment range :	0.01..300 s
Resolution :	0.01 s
Factory setting :	10 s
Customer adjustment :	_____ s



Example : CP.8 = 10 s.; the drive should decelerate from 60 Hz to 10 Hz
Delta f = 60 Hz – 10 Hz = 50 Hz

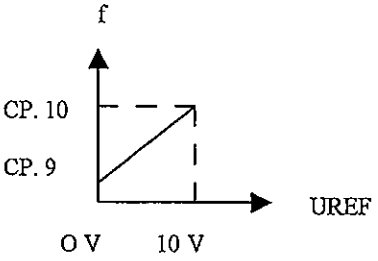
Actual deceleration time = (50 Hz/100 Hz) x 10 s = 5 s

Minimal frequency

Frequency on which the inverter runs without presetting ananalog set value.
Internal limiting of the fixed frequencies CP.11 ... CP.13

CP. 9

Adjustment range :	0.0.. 409.58 Hz
Resolution :	0.0125 Hz
Factory setting :	0.0 Hz
Customer adjustment :	_____ Hz



Maximal frequency

CP. 10

Frequency on which the inverter runs with maximum ananalog set value.
Internal limiting of the fixed frequencies CP.11 ... CP.13

Adjustment range :	0.0.. 409.58 Hz
Resolution :	0.0125 Hz
Factory setting :	0.0 Hz
Customer adjustment :	_____ Hz

CP. 11
CP. 12
CP. 13

Three fixed frequencies can be adjusted. The selection of the fixed frequencies occurs with the inputs I1 and I2 (terminal X1.4 and X1.5)

Adjustment range :	0.0...409.58 Hz
Resolution :	0.0125 Hz
Factory setting :	0.0 Hz
Customer adjustment :	_____ Hz
Customer adjustment :	_____ Hz
Customer adjustment :	_____ Hz

If presetting occurs outside of the fixed limits of CP.9 and CP.10, then the frequency is internally limited .

3.6 Special Adjustments

The following parameters serve to optimize the drive and adaption onto certain applications. These adjustments can be ignored at the initial startup.

Max. ramp current

CP. 14

This function protects the frequency inverter against switching off by overcurrent during the acceleration and/or deceleration ramp. When the ramp reaches the adjusted value here, then it is stopped so long until the current decreases again.

Adjustment range :	10...200 %
Resolution :	1 %
Factory setting :	1902(140) %
Note :	up from size 13>150% = off
Customer adjustment :	_____ Hz

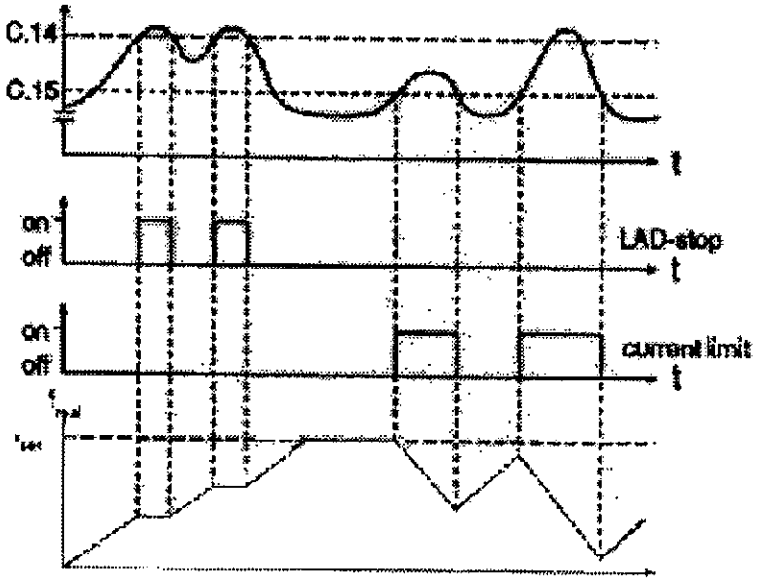
Up to size 12 (up from size 13)

Max. constant current

CP. 15

This function protects the frequency inverter against switching off due to overcurrent during constant output fequency. When exceeding the adjsuted value here, the ouput frequnecy is reduced until the value drops below the adjusted value ;

Adjustment range :	10...200 % OFF
Resolution :	1 %
Factory setting :	200 %
Customer adjustment :	_____ Hz



Speed search

When connecting the frequency inverter onto a decelerating motor, an error can be triggered by the differing rotating field frequencies. At activated on speed search the inverter searches the actual motor speed, adapts its output frequency and accelerates with the adjusted ramp onto the given set value. The parameter determines, under what conditions the functions operate. With several conditions the sum of the value must be entered. Example : CP.16 = 12 means after reset and after auto-reset UP

Adjustment range : oFF, 1 ... 15
Resolution : 1
Factory setting : 8
Customer adjustment : _____ %

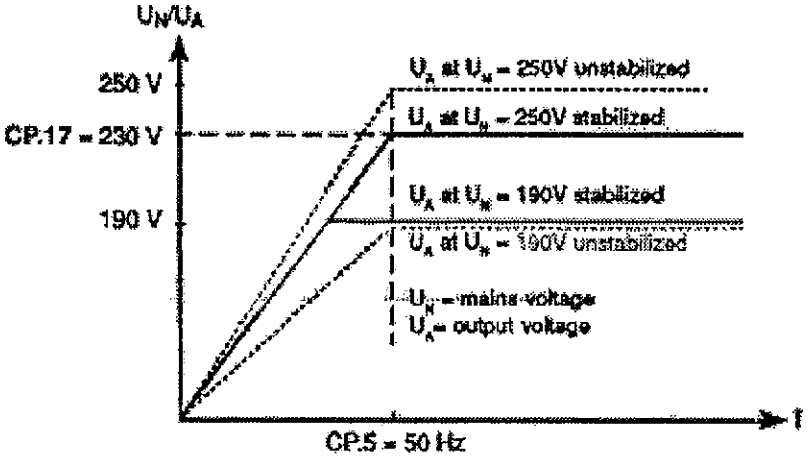
Value	Condition
OFF	Function off
1	At control release
2	At switch on
4	After reset
8	After Auto-Reset UP

Voltage stabilization

CP.17

This parameter can adjust a regulated output voltage in relation to the rated frequency. Because of this voltage variations at the input as well as in the intermediate circuit only have a small influence on the output voltage (U/f-characteristic). The function allows, among other things, an adaption of the output voltage onto the special motors. In the example below the output voltage is stabilized onto 230 V (0 % boost).

Adjustment range :	150...649 V, oFF
Resolution :	1 V
Factory setting :	oFF
Customer adjustment :	_____ V



Slip compensation

CP.18

Slip compensation balances the speed changes caused by the load variation. This only operates in connection with autoboost. In order to activate the function, set the value at 1.00 and optimize as directed in the examples below.

Adjustment range :	-2.50 ... 2.50
Resolution :	0.01
Factory setting :	0.00 (off)
Customer adjustment :	_____

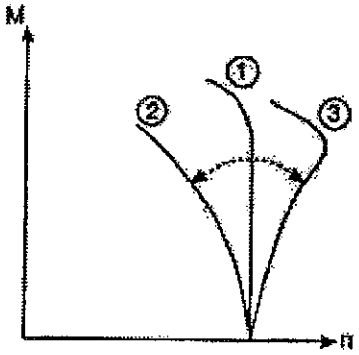
Autoboost

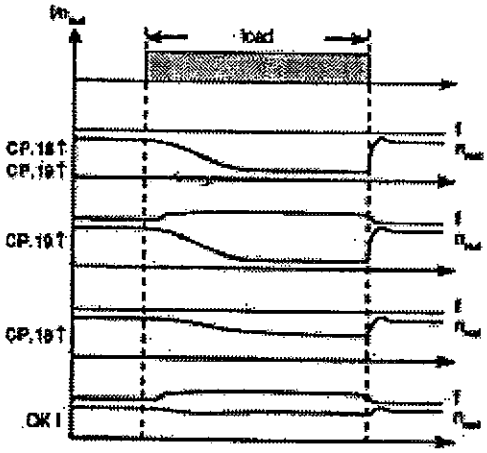
CP.19

Autoboost causes an automatic I*R-compensation by raising the output voltage during high load torques. The magnetizing current remains constant. To activate the function set the value to 1.00 and optimize as directed in the examples

Adjustment range :	-2.50 ... 2.50
Resolution :	0.01
Factory setting :	0.00 (off)
Customer adjustment :	_____

Slip compensation and autoboost work on the basis of presetting motor data. When using a special motor or in case of overdimensioning of more than one size, then both functions should be activated





1) good – speed remains stable at increasing torque
2) bad – speed decreases with increasing torque
3) bad – speed is increased too much at load

DC-braking

CP.20

With DC-braking the motor is not decelerated by the ramp. Quick braking is caused by D.C. voltage, which is applied onto the motor winding. This parameter determines how the dc-braking is triggered.

Value	Activation
0	DC-braking deactivated
1	DC-braking at switch off the direction of rotation and in reaching 0Hz. Braking time is dependent on CP.21 or until the next direction of rotation presetting.
2	DC-braking as soon as the direction of rotation presetting is absent. Braking time dependent on the real frequency.
3	DC-braking, as soon as the direction of rotation changes. Braking time dependent on the real frequency.
4	DC-braking at switch off the direction of rotation and the real frequency goes below 4Hz.
5	DC-braking, when the real frequency goes below 4 Hz.
6	DC-braking , as soon as the set value goes below 4 Hz.
7	DC-braking, when input I3 (terminal X1.6/Version C) is switched. Braking time is dependent on the real frequency. At version S = value « 0 ».
8	DC-braking as long as input I3 (terminal X1.6/Version C) is switched. At version S = value « 0 ».
9	DC-braking after switching on the modulation on. Braking time is dependent on CP.21

Factory setting : 0.00 (off)
Note : Enter parameter
Customer adjustment : _____

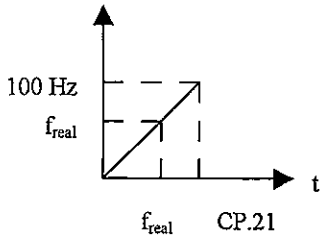
Braking time

CP.21

The braking time is evaluated depending on CP.20 as follow :

- entered time = braking time
- entered time relates to Hz and decreases/increases proportionnally to the real frequency

Adjustment range : 0.00...100 s
Resolution: 0.01 s
Factory setting : 10 s
Customer adjustment :



Relay output

Relay output (terminal X1.1 ... X1.3) is adjusted in the factory as a fault relay. This parameter can adjust the function of the output onto any function in the table below.

Value	Function
0	No function
1	Generally on
2	Fault relay
3	Fault rely (not with active Auto-Restart function)
4	Overload alert signal (10s before switch off)
5	Overtemperature alert signal inverter (10s before switch off)
6	Overtemperature alert signal motor (10s before switch off)
7	Only for application-mode
8	Max. constant current (stall, CP..15) exceeded
9	Max. LA-/LD-Stop (CP.14) exceeded
10	DC-braking active
11	Only for application mode
12	Rate of utilization (ru.7) > 100 %
13	Only for application mode
14	Actual value = set value (ru.0 = Fcon, rcon ; not at noP, LS, error, SSF)
15	Accelerate (ru.0 = Facc, rAcc, LAS)
16	Decelerate (ru.0 = FdEc, rdEc, LdS)
17	Right handed rotation (not at noP, LS error)
18	Left handed rotation (not at noP, LS error)
19	Real direction of rotation = set direction of rotation
20	Real value > frequency level CP.23
21	Set value > frequency level CP.23
22	Only for application-mode
23	Operative-signal (after initialization as long as no error is active)
24	Run signal

Factory setting : 2
Note : Enter-parameter
Customer adjustment : _____

Frequency value

This parameter determines the switching point for the relay output (X1.21 ... X1.23 at C-version), or relay output X1.1 ... X1.3 when CP.22 = « 20 » or « 21 »). After the switching of the relay, the frequency can move within a 0.5 Hz window, without the relay dropping off.

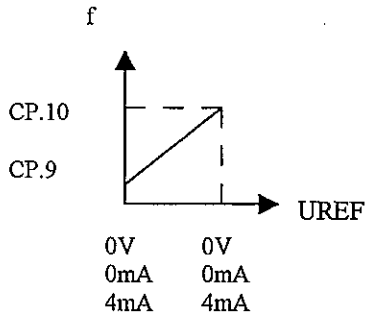
Factory setting : 2
Note : Enter-parameter
Customer adjustment : _____

Reference signal

The set value input REF (terminal X1.17/version C) can be driven by various signal levels. It operates commulatively to the difference voltage input, but can also serve as the sole input to the set value presetting. In order to correctly evaluate the signal, this parameter must be adapted to the signal source.

Value	Set value signal
0	0 ... 10V DC/Ri = 4 kOhm
1	0 ... 20 mA DC/Ri = 250 Ohm
2	4 ... 20mA DC/Ri = 250 Ohm

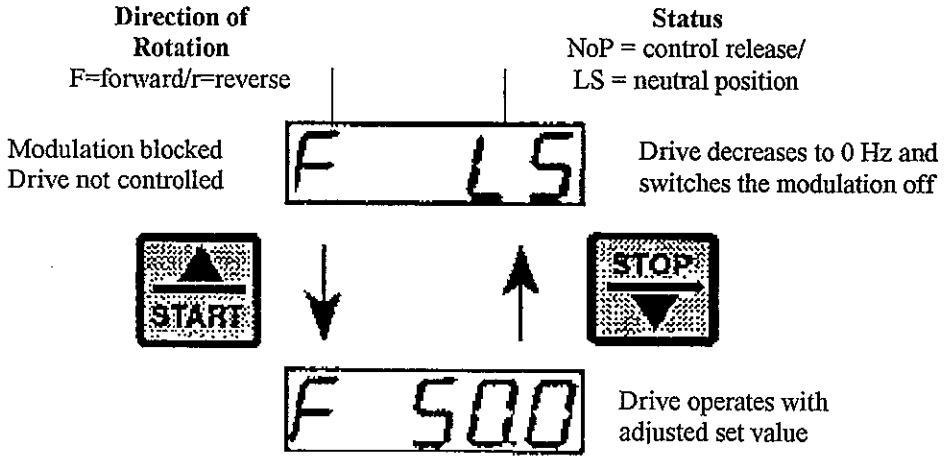
Factory setting : 1
Customer adjustment : _____



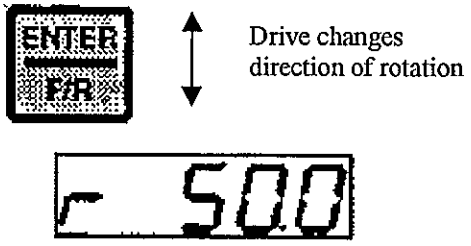
3.7 The Drive Mode

The drive mode is a operating mode of KEB COMBIVERT to start the drive manually by the operator. After switching by control release the set value and rotation presetting is done exclusively by the keyboard. In order to activate the drive mode the corresponding **password in CP.0** must be entered. The display switches over as follows ;

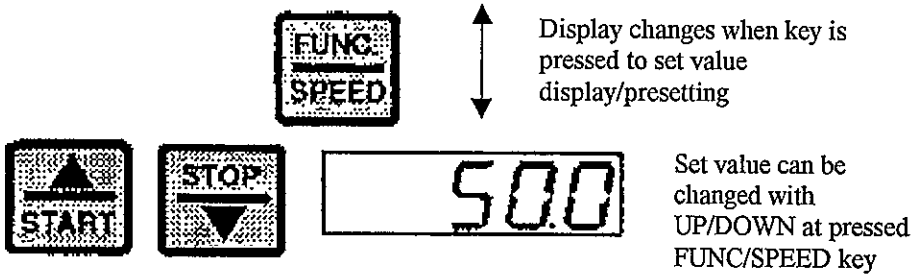
3.7.1 Start/Stop Drive



3.7.2 Change Direction of Rotation



3.7.3 Preset Set Value



3.7.4 Leave Drive Mode

To exit drive mode in the inverter must be in status « stop ». press the FUNC and ENTER keys simultaneously for about 3 seconds in order to leave the drive mode. The CP-parameters appear in the display.

4. ERROR DIAGNOSIS

4. Error Diagnosis

Error messages are represented with an « E » and the corresponding error in the display of the KEB COMBIVERT. The displays and their causes are described below.

undervoltage

Occurs, when the intermediate circuit voltage falls below the permissible value. Possible causes are :
- input voltage too low or unstable
- inverter power too small
- voltage loss due to incorrect cabling
- power supply by generator/transformer breaks down, because ramps are too short

overvoltage

Occurs, when the intermediate circuit voltage rises above over the permissible value ;
Possible causes are :
- input voltage too high
- disturbance voltages at the input
- delay ramps too short

overcurrent

Occurs, when exceeding the peak current

overload

Occurs when a too high load is applied for more than the allowed time (see « Performance Data »). Possible causes for this are :-
- error or overload in the application
- inverter incorrectly dimensioned
- motor incorrectly wired

Cooling down phase completed

After error E.OL you must wait for a cooling down time. This message appears after the cooling down phase is completed. The error can be reset.

overtemperature

Occurs, when the inverter temperature > 70 °C. Possible causes for this are :
- insufficient cooling
- surrounding temperature too high
- ventilator clogged

Ext. overtemperature

Occurs, when external temperature monitoring is triggered. Possible causes for this are :
- resistor on terminals OH/OH > 1650 Ohm
- motor overloaded
- break in the cable

No overtemperature

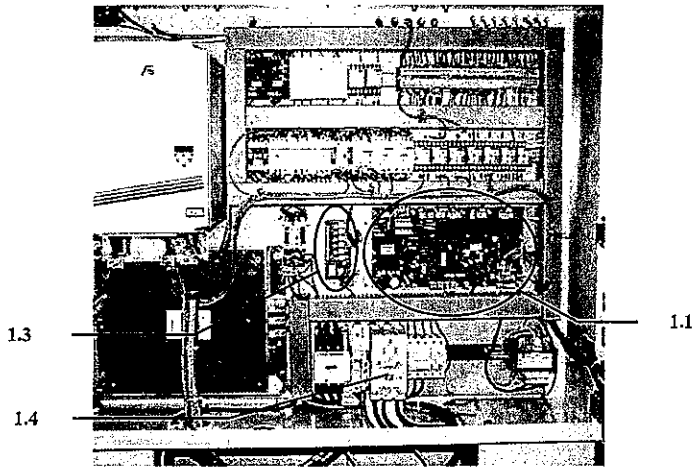
Internal or external excess-temperature error do not occur anymore. Error « E.OH » or « E.dOH » can be reset.

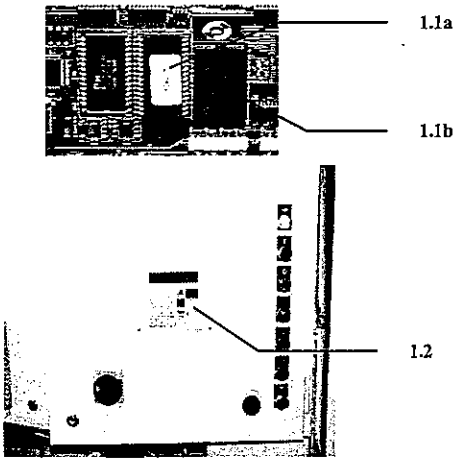
Current limit resistor error

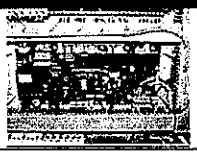
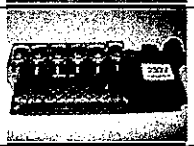
Current limit resistor not bridged, occurs for a short time during the turn on phase and a reset immediately. If the error message remains the following may be the cause :
- incorrect or input voltage too small
- high loss in the supply line
- brake resistor incorrectly connected
- braking module defective

SPARE PARTS INDEX - ERSATZTEILEN EINHALT - INDEX PIECES DE RECHANGE - INHOUD WISSELSTUKKEN

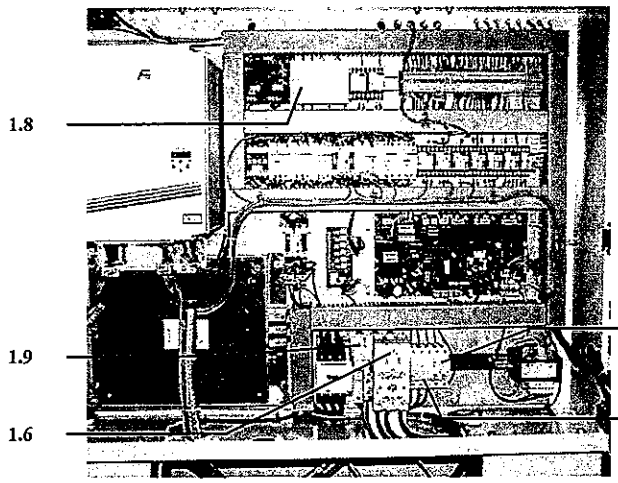
ELECTRICAL ELEMENTS – ELEKTRISCHE TEILE – ELEMENTS ELECTRIQUE – ELECTRISCHE ELEMENTEN

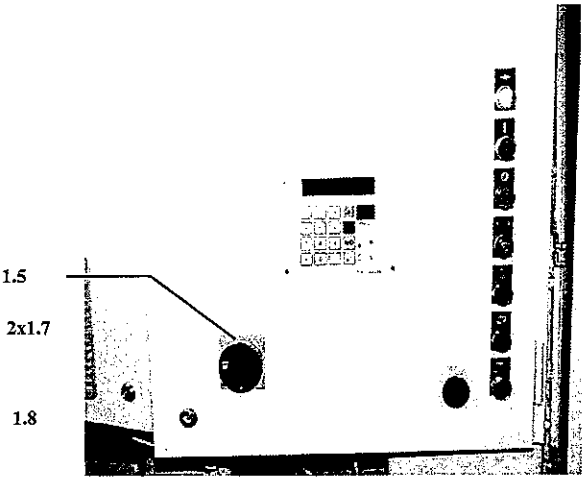




Position No	Quantity	Description	Part No	Picture
1.1	1	PS40 print PS40 Platine PS40 platine PS40 print	07623001	
1.1a	1	PS40 E-PROM (programmed) PS40 E-PROM (programmiert) PS40 E-PROM (programmé) PS40 E-PROM (geprogrammeerd)	07623015	
1.1b	1	PS40 ZERO POWER RAM	07623018	
1.2	1	PS40 display and push-buttons PS40 Anzeige und Drucktaste PS40 afficheur et bouton-poussoir PS40 display met drukknoppen	07623004	
	1	Sticker PS40 Beschriftung PS40 Etiquette PS40 Klever PS40	07623011	
	1	Temperature sensor ½" G Temperaturfühler ½" G Sonde de température ½" G Temperatuurvoeler ½" G	62729900	
1.3	1	Soap print with 6 outputs Seifenplatine mit 6 Ausgänge Platine avec 6 sorties pour pompes Zeepprint met 6 uitgangen	07622231	
1.4	1	Main switch (Q1) 100 A Hauptschalter (Q1) 100 A Interrupteur general (Q1) 100 A Hoofdschakelaar (Q1) 100 A	07601008	

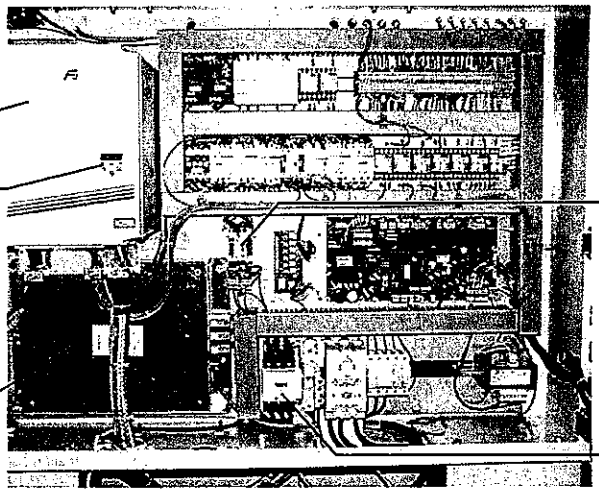
ELECTRICAL ELEMENTS – ELEKTRISCHE TEILE – ELEMENTS ELECTRIQUE – ELECTRISCHE ELEMENTEN

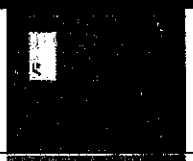
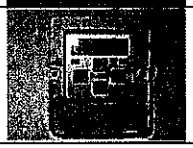
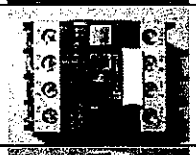
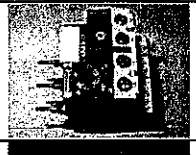




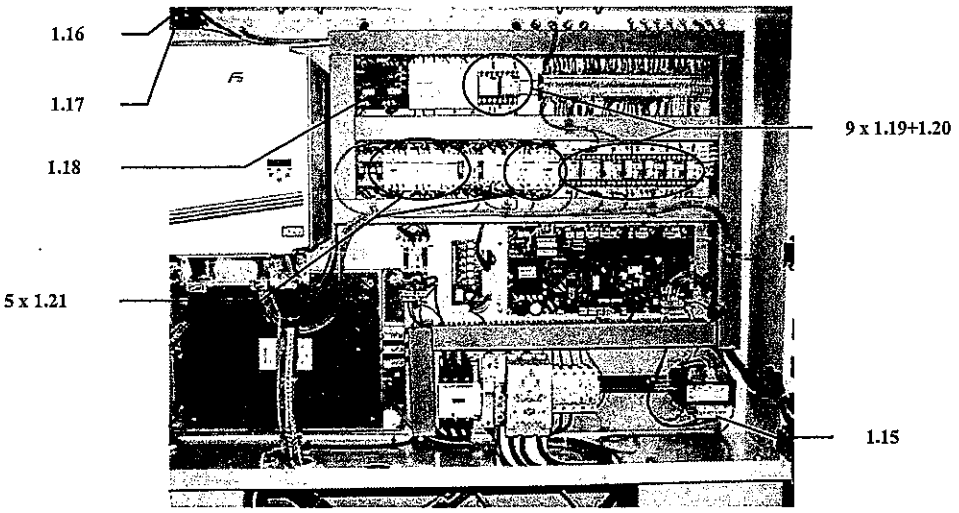
Position No	Quantity	Description	Part No	Picture
1.5	1	Turning knob for Q1 Drehknopf für Q1 Bouton de commande pour Q1 Draaiknop voor Q1	07601003	
1.6	1	Protection cover for Q1 (100 A) Abschirmung für Q1 (100 A) Capot de protection pour Q1 (100 A) Afschermknop voor Q1 (100 A)	07601009	
1.7	2	Fuse holder LEGRAND 32 A Schmeltzsicherungshalter LEGRAND 32 A Porte fusible LEGRAND 32 A Zekeringsvoet LEGRAND 32 A	07706250	
1.8	2	Fuse holder LEGRAND 3 x 32 A Schmeltzsicherungshalter LEGRAND 3 x 32 A Porte fusible LEGRAND 3 x 32 A Zekeringsvoet LEGRAND 3 x 32 A	07706249	
1.9	1	Fuse holder LEGRAND (14 x 51) Schmeltzsicherungshalter LEGRAND (14 x 51) Porte fusible LEGRAND (14 x 51) Zekeringsvoet LEGRAND (14 x 51)	07706256	
	3	Fuse 2 A Schmeltzsicherung 2 A Fusible 2 A Smeltveiligheid 2 A	07706259	
	3	Fuse 6 A Schmeltzsicherung 6 A Fusible 6 A Smeltveiligheid 6 A	07706252	
	3	Fuse 50 A Schmeltzsicherung 50 A Fusible 50 A Smeltveiligheid 50 A	07706273	

ELECTRICAL ELEMENTS – ELEKTRISCHE TEILE – ELEMENTS ELECTRIQUE – ELECTRISCHE ELEMENTEN



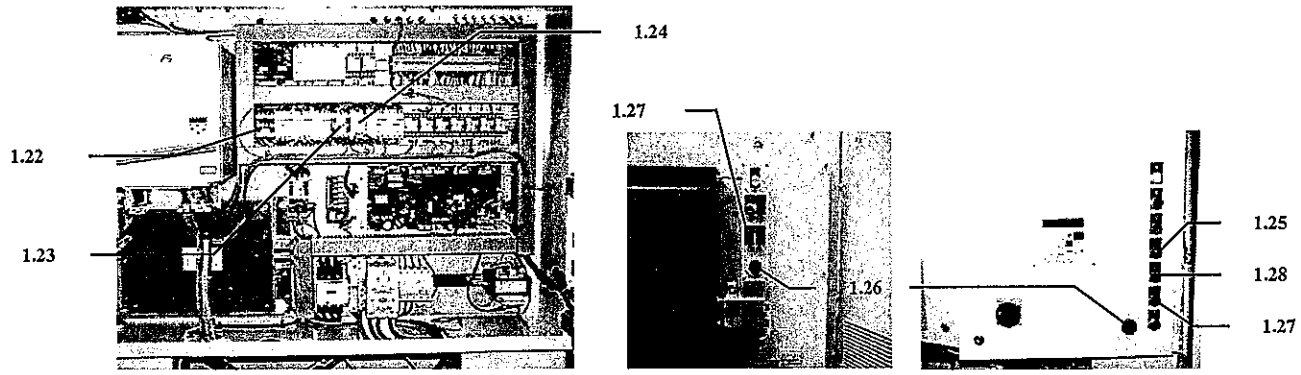
Position No	Quantity	Description	Part No	Picture
1.10	1	Frequency inverter KEB 19F4 (programmed) Frequenzumrichter KEB 19F4 (programmiert) Variateur de fréquence KEB 19F4 (programmé) Frekwentieregelaar KEB 19F4 (geprogrammeerd)	07585070	
1.11	1	Digital operator for KEB F4 Digital Operator für KEB F4 Opérateur digitale pour KEB F4 Standard display voor KEB F4	07585079	
	1	Interface operator for KEB F4 Interface Operator für KEB F4 Opérateur avec interfaçage pour KEB F4 Display met interface voor KEB F4	07585080	
	1	Programming cable for KEB F4 Programmierkabel für KEB F4 Cable de programmation pour KEB F4 Programmeerkabel voor KEB F4	07585095	
1.12	1	Interference filter 30 kW Funkentsörfilter 30 kW Filtre anti-interférence 30 kW Ontstoorfilter 30 kW	07585129	
	1	Contactor LC1-DO910 M7 Schütz LC1-DO910 M7 Contacteur LC1-DO910 M7 Kontaktor LC1-DO910 M7	07601860	
1.13	1	Thermal overload relay LR2-D1305 Überstromrelais LR2-D1305 Relais thermique LR2-D1305 Thermische relais LR2-D1305	07601884	
1.14	1	Contactor LC1- D6511 M7 Schütz LC1- D6511 M7 Contacteur LC1- D6511 M7 Kontaktor LC1- D6511 M7	07601865	

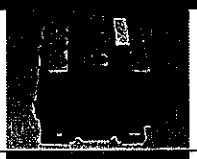
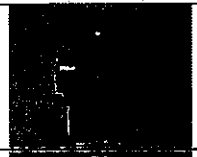
ELECTRICAL ELEMENTS – ELEKTRISCHE TEILE – ELEMENTS ELECTRIQUE – ELECTRISCHE ELEMENTEN



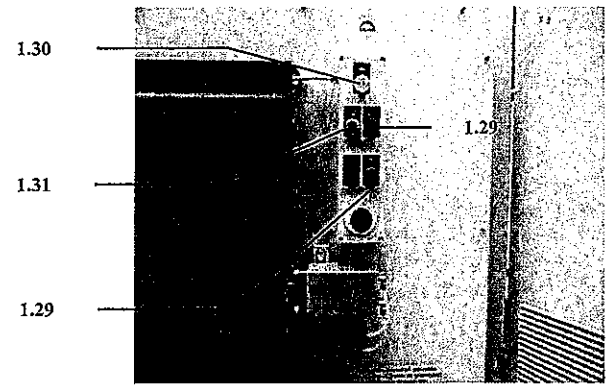
Position No	Quantity	Description	Part No	Picture
1.15	1	Transfo 250 VA Trafo 250 VA Transfo 250 VA Transfo 250 VA	07602035	
1.16	1	Cooling fan 125 x 125 mm Kühlventilator 125 x 125 mm Ventilateur 125 x 125 mm Koelventilator 125 x 125 mm	07591001	
1.17	1	Finger protection for fan Fingerschütz für Ventilator Protection pour ventilateur Vingerbescherming voor ventilator	07591005	
	1	Air inlet with filter Lufteinlass mit Filter Entrée d'air avec filter Luchtaanvoerraam	02701022	
1.18	1	Zero speed relay XPSVN3742 Nulgeschwindigkeitsrelais XPSVN3742 Relais de vitesse XPSVN3742 Nulsnelheidsrelais XPSVN3742	07590530	
1.19	1	Plug in relay 230 VAC Steckrelais 230 VAC Relais débrayable 230 VAC Stekkerrelais 230 VAC	07620108	
1.20	1	Base octale Oktaalfuss Socle octale Oktaalvoet	07620008	
1.21	1	Relay CAD 32 P7 Relais CAD 32 P7 Relais CAD 32 P7 Relais CAD 32 P7	07620161	

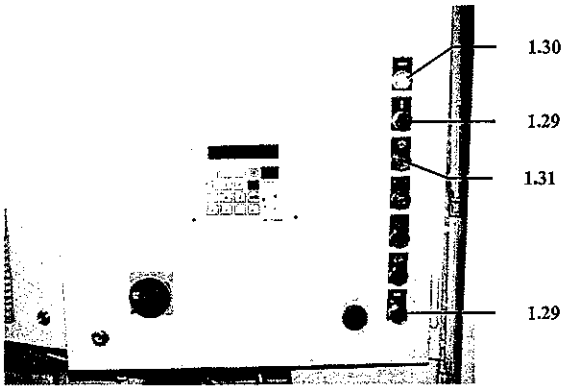
ELECTRICAL ELEMENTS – ELEKTRISCHE TEILE – ELEMENTS ELECTRIQUE – ELECTRISCHE ELEMENTEN

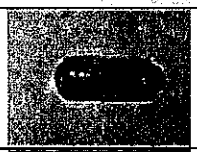
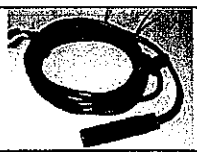


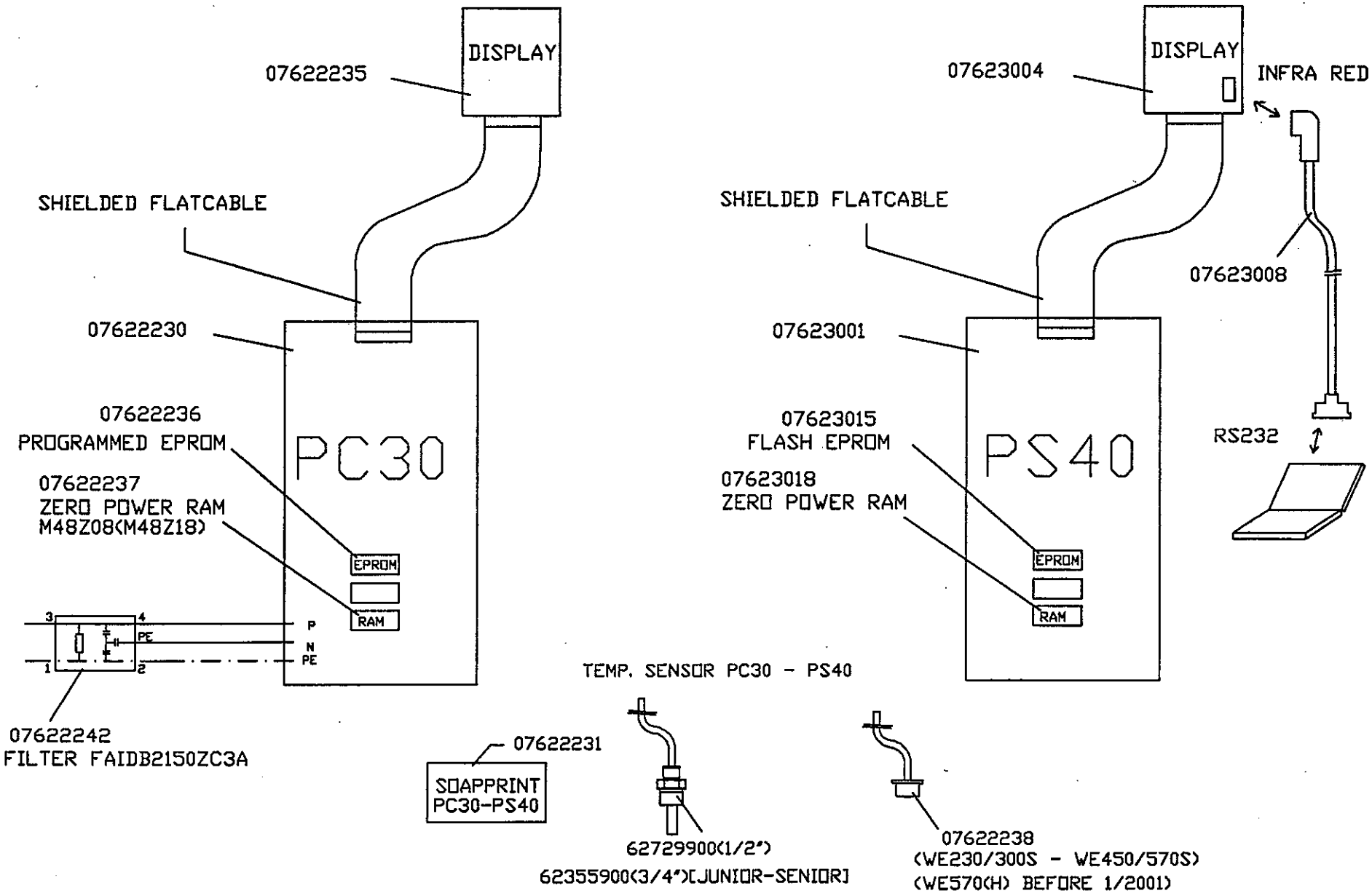
Position No	Quantity	Description	Part No	Picture
1.22	1	Relay CA2 DN22M7 Relais CA2 DN22M7 Relais CA2 DN22M7 Relais CA2 DN22M7	07620162	
1.23	1	Auxiliary contact LA1-DN11 Hilfkontakt LA1-DN11 Contact auxiliaire LA1-DN11 Hulpkontakt LA1-DN11	07620163	
1.24	1	Auxiliary contact LA2-DN22 Hilfkontakt LA2-DN22 Contact auxiliaire LA2-DN22 Hulpkontakt LA2-DN22	07620164	
1.25	1	Key switch Schlüsselschalter Interrupteur à clef Sleutelschakelaar	07606035	
1.26	1	Emergency stop button Not-Ausschalter Bouton arrêt d'urgence Noodstop	07606024	
	1	Switch XB2-BD25 Schalter XB2-BD25 Interrupteur XB2-BD25 Schakelaar XB2-BD25	07606022	
1.27	1	Push-button black Drücktaste Schwarz Bouton-poussoir noir Zwarte drukknop	07606018	
1.28	1	Push-button green Drücktaste grün Bouton-poussoir vert Groene drukknop	07606020	
	1	Bell Klingel Sonnette Bel	07603039	

ELECTRICAL ELEMENTS – ELEKTRISCHE TEILE – ELEMENTS ELECTRIQUE – ELECTRISCHE ELEMENTEN





Position No	Quantity	Description	Part No	Picture
	1	Bell transfo Trafo für Klingel Transfo pour sonnette Bel transfo	07603040	
1.29	1	RESET push button green RESET Drücktaste grün Bouton-poussoir vert RESET Verlichte drukknop groen RESET	07606082	
1.30	1	White lamp Weisse Lampe Lampe blanc Witte lamp	07705186	
1.31	1	Orange lamp Orange Lampe Lampe orange Oranje lamp	07705188	
	1	Bulb 230 VAC Lampe 230 VAC Lampe 230 VAC Lamp 230 VAC	07705189	
	1	Door switch Türschalter Fin de course porte Deurschakelaar	07614098	
	1	Out of balance switch Unwichtschalter Fin de course anti balourd Schudkontakt	07614033	
	1	Brake contact Bremse Kontakt Fin de course frein Remkontakt	07614031	
	1	Proximity cell positioning Näherungsschalter Planfahrt Cellule de proximité positionnement Benaderingsschakelaar positioneren	07620151	



Issue Code	Date	Name		
	//		L. Mod	01/09/2001
	//			
	//			

PC30 - PS40

D'HOOGE NV
B 9050 GENT

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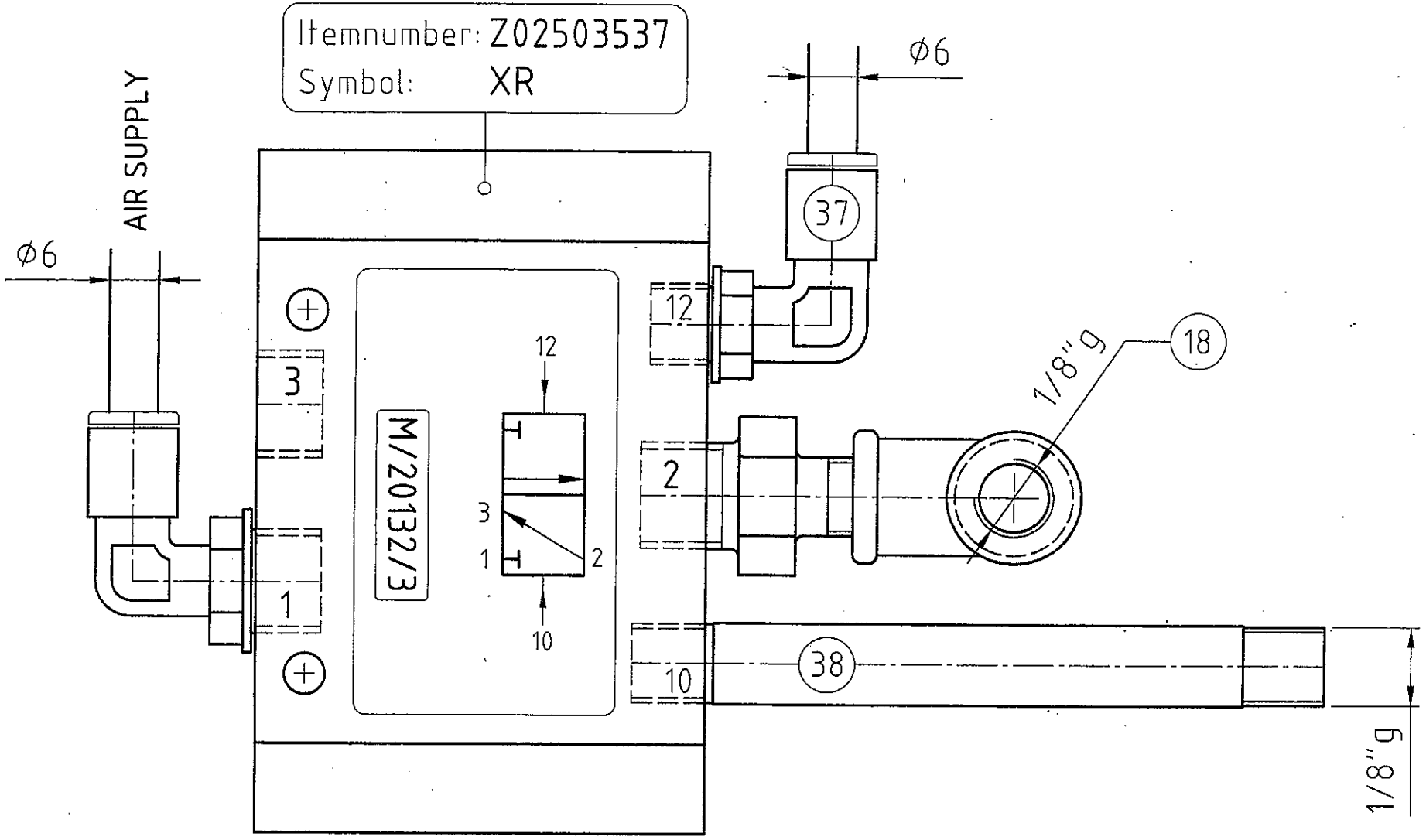
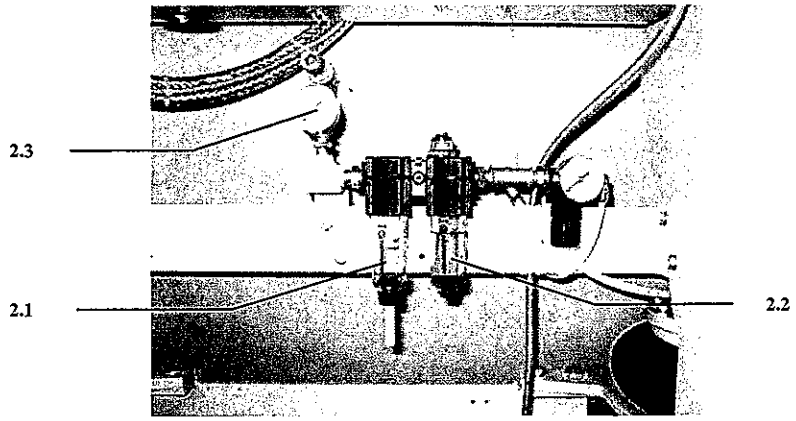
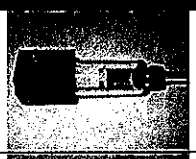
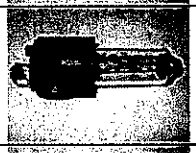
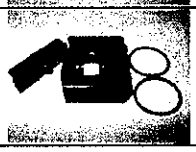
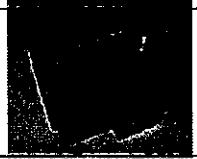
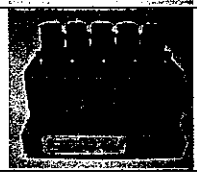


WE980SP / WE1300SP / WE2050SP / WE2910SP

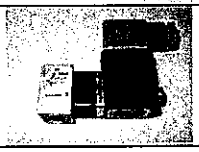
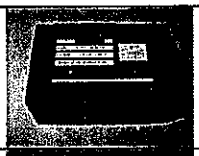
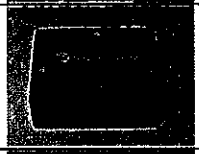
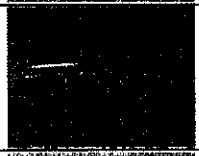
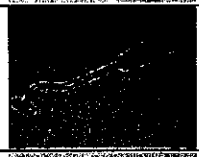
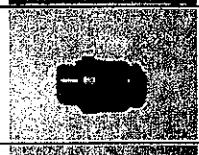
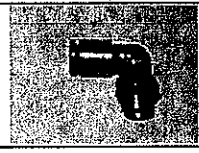
Machine type:		N°			
	NAAM NAME	DATUM DATE	N.V. DHOOGE INDUSTRIES B-9050 GENT Belgium	VERVANGT: REPLACES:	SLIDING VALVE -> BAND BRAKE
Getek/Drawn	MUSZGNUG	22-01-04		VERVANGEN DR: REPLACED BY:	PLANNUMMER: 217400.05
Nagz./Check					

PNEUMATIC ELEMENTS AND CONNECTIONS – PRESSLUFT TEILEN UND VERBINDUNGEN
ELEMENTS ET RACCORDEMENTS PNEUMATIQUES – PNEUMATISCHE ELEMENTEN EN VERBINDINGEN

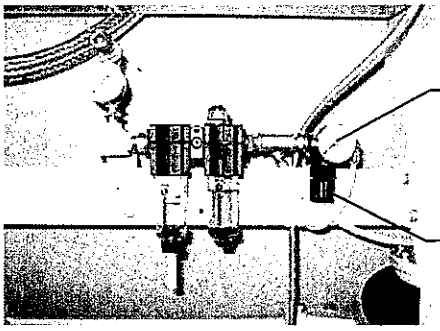


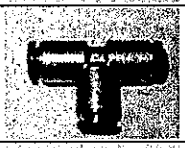
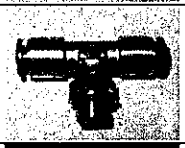
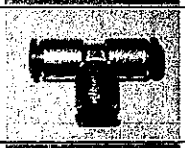
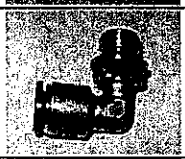
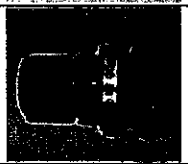
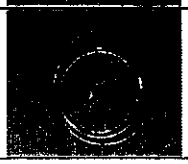
Position No	Quantity	Description	Part No	Picture
2.1	1	Air filter F Luftfilter F Filtre d'air F Luchtfilter F	02503501	
2.2	1	Air lubricator L Luftschmierung L Huileur L Luchtsmeerder L	02503520	
	1	Holder Halter Support Houder	02503495	
2.3	1	Manometer 43mm Manometer 43mm Manomètre 43mm Manometer 43mm	02503508	
	1	Adaptor 1/8" x M5 Verbindung 1/8" x M5 Connection 1/8" x M5 Verbinding 1/8" x M5	23613900	
	1	Solenoid valve MART.N.C. 220 VAC Luftventil MART.N.G. 220 VAC Vanne pneumatique MART.N.F. 220 VAC Luchtkraantje MART.N.G. 220 VAC	07618098	
	1	Manyfold 4 x solenoid valve N.C. Block 4 x Luftventil N.G. Batterie 4 x vanne N.F. Batterij 4 x luchtkraantje N.G.	07618095	
	1	Manyfold 5 x solenoid valve N.C. Block 5 x Luftventil N.G. Batterie 5 x vanne N.F. Batterij 5 x luchtkraantje N.G.	07618096	

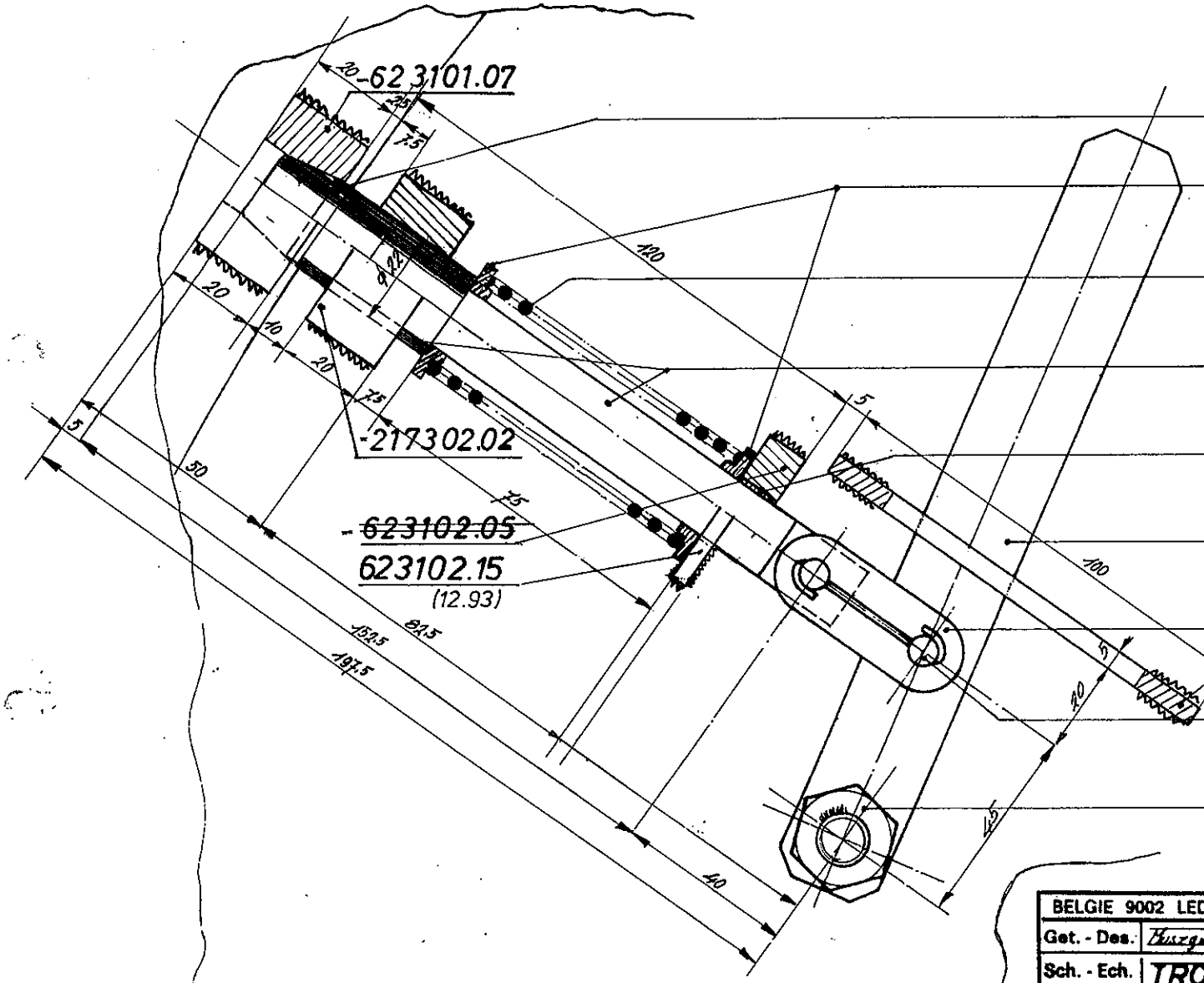
PNEUMATIC ELEMENTS AND CONNECTIONS – PRESSLUFT TEILEN UND VERBINDUNGEN
ELEMENTS ET RACCORDEMENTS PNEUMATIQUES – PNEUMATISCHE ELEMENTEN EN VERBINDINGEN

Position No	Quantity	Description	Part No	Picture
	1	Manyfold 6 x solenoid valve N.C. Block 6 x Luftventil N.G. Batterie 6 x vanne N.F. Batterij 6 x luchtkraantje N.G.	07618097	
	4	Solenoid valve MART.N.O. 220 VAC Luftventil MART.N.O. 220 VAC Vanne pneumatique MART.N.O. 220 VAC Luchtkraantje MART.N.O. 220 VAC	07618100	
	1	Coil MART. 8 VA 220 VAC Spule MART. 8 VA 220 VAC Bobine MART. 8 VA 220 VAC Spoel MART. 8 VA 220 VAC	07618099	
	1	Sliding valve 3/2 (Brake) Schiebeventil 3/2 (Bremse) Distributeur 3/2 (Frein) Schuifventiel 3/2 (Rem)	02503537	
	1	Security pressure switch bandbrake PMC 10 Sicherheits Druckschalter Bandbremse PMC 10 Interrupteur de pression frein à bande PMC 10 Veiligheidsdrukschakelaar bandrem PMC 10	07609015	
	1	T-value T-Ventil Sélecteur de circuit T-ventiel	02503531	
	-	Airline 6mm Luftschlauch 6mm Tube pneumatique 6mm Persluchtleiding 6mm	02503620	
	1	Quick connector Schnellanschluβ Connecteur rapide Snelaansluiter	02506009	
	1	Airgun for airsprings Pistole für Luftfederbalg Gonfleur de suspension Luchtveeropblazer	02506008	
	-	Straight connector 1/8" x 6mm Geradeverbindung 1/8" x 6mm Connecteur droit 1/8" x 6mm Rechte verbinding 1/8" x 6mm	02503730	
	-	Elbow connector 1/8" x 6mm Winkelanschluβ 1/8" x 6mm Connecteur coude 1/8" x 6mm Knieverbinding 1/8" x 6mm	02503700	

PNEUMATIC ELEMENTS AND CONNECTIONS – PRESSLUFT TEILEN UND VERBINDUNGEN
ELEMENTS ET RACCORDEMENTS PNEUMATIQUES – PNEUMATISCHE ELEMENTEN EN VERBINDINGEN

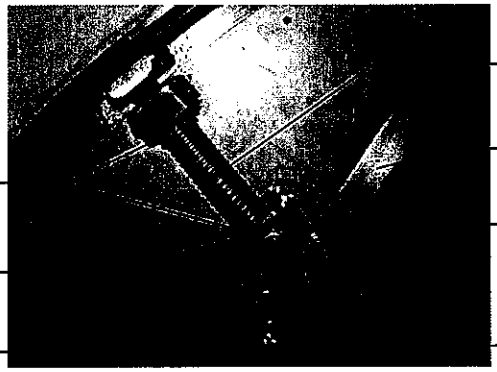


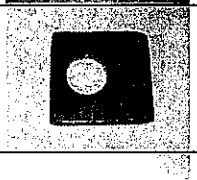
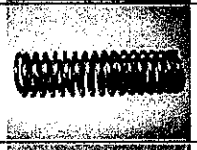
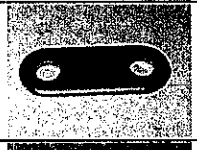
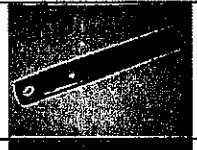
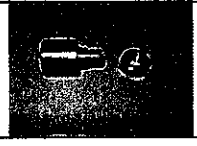
Position No	Quantity	Description	Part No	Picture
	-	Straight connector 2 x 6mm Geradeverbindung 2 x 6mm Connecteur droit 2 x 6mm Rechte verbinding 2 x 6mm	02503800	
	-	T-connector 3 x 6mm T-verbindung 3 x 6mm Connecteur T 3 x 6mm T-verbinding 3 x 6mm	02503750	
	-	T-connector 3 x 1/8" x 6mm T-verbindung 3 x 1/8" x 6mm Connecteur T 3 x 1/8" x 6mm T-verbinding 3 x 1/8" x 6mm	02503754	
	-	Airline 8mm Luftschlauch 8mm Tube pneumatique 8mm Persluchtleiding 8mm	02503621	
	-	T-connector 8mm T-verbindung 8mm Connecteur T 8mm T-verbinding 8mm	02503751	
	-	Elbow connector 1/8" x 8mm Winkelanschluß 1/8" x 8mm Connecteur coude 1/8" x 8mm Knieverbinding 1/8" x 8mm	02503703	
	-	Elbow connector 1/4" x 8mm Winkelanschluß 1/4" x 8mm Connecteur coude 1/4" x 8mm Knieverbinding 1/4" x 8mm	02503705	
2.4	1	Air-pressure regulator Luftdruckregler Détendeur pneumatique Luchtdrukregelaar	02503544	
2.5	1	Manometer Ø 43 0 – 1,5 bar Manometer Ø 43 0 – 1,5 bar Manomètre Ø 43 0 – 1,5 bar Manometer Ø 43 0 – 1,5 bar	04302079	

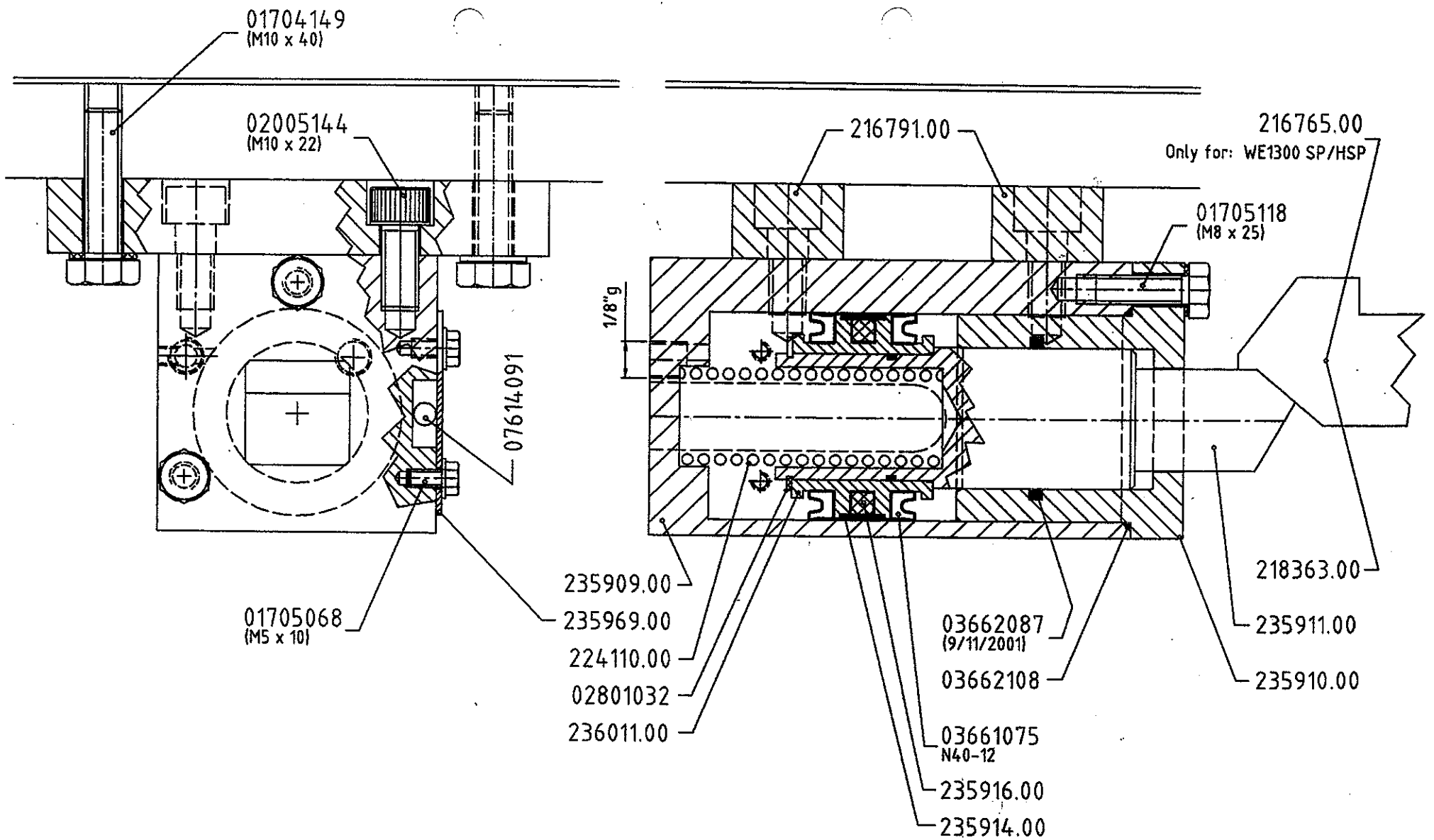


BELGIE 9002 LEDEBERG - N.V. Em. DHOOGE. S.A. 9002 LEDEBERG - BELGIQUE			
Get. - Des. Huszmag	Dat : 28/09/87	W.C. Type 1022-1300 / 1222G-1350 / Type 222-640	
Sch. - Ech. 1/1	TROMMELDEURSLOT SERRURE DE LA PORTE TAM. DOORLOCK INNERCAGE TROMMELTÜRVERSCHLUSS		Nr. 217300.01

INNERDOOR LOCK – INNERTÜR VERSCHLUß – SERRURE DE PORTE INTERIEURE – BINNENDEUR SLOT



Position No	Quantity	Description	Part No	Picture
	1	Innerdoor lock Türriegel Tige pour porte intérieure Grendel met glijbus	62324500	
3.1	1	Guiding Führung Guide Voering	62310215	
3.2	1	Ring Scheibe Rondelle Ring	22415200	
3.3	1	Spring Feder Ressort Veer	22411000	
3.4	1	Plate Verbindingsstück Plaquette Verbindingsstuk	21651600	
3.5	2	Pin Drehstifte Tige Draainagel	21651700	
3.6	1	Handle Handgriff Levier Handgreep	21651800	
3.7	1	Pin Stift Tige Pen	01912022	
	1	Locking screw M5 x 10 Sicherheitsschraube M5 x 10 Vis de sécurité M5 x 10 Veiligheidsschroef M5 x 10	02016004	

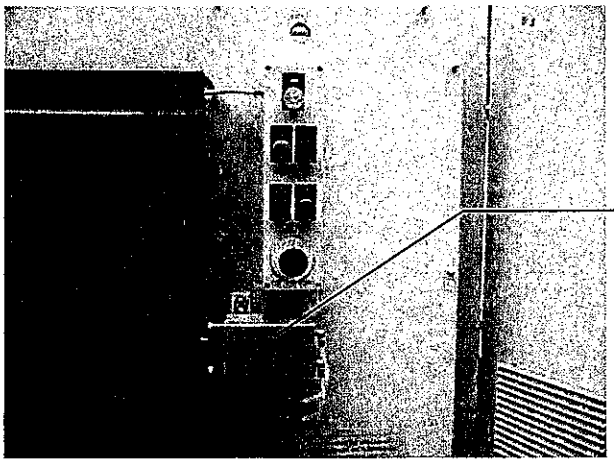


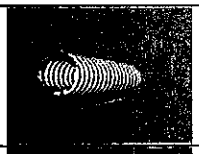
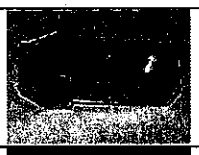
235400.18 = 235400.14 + 235916.00

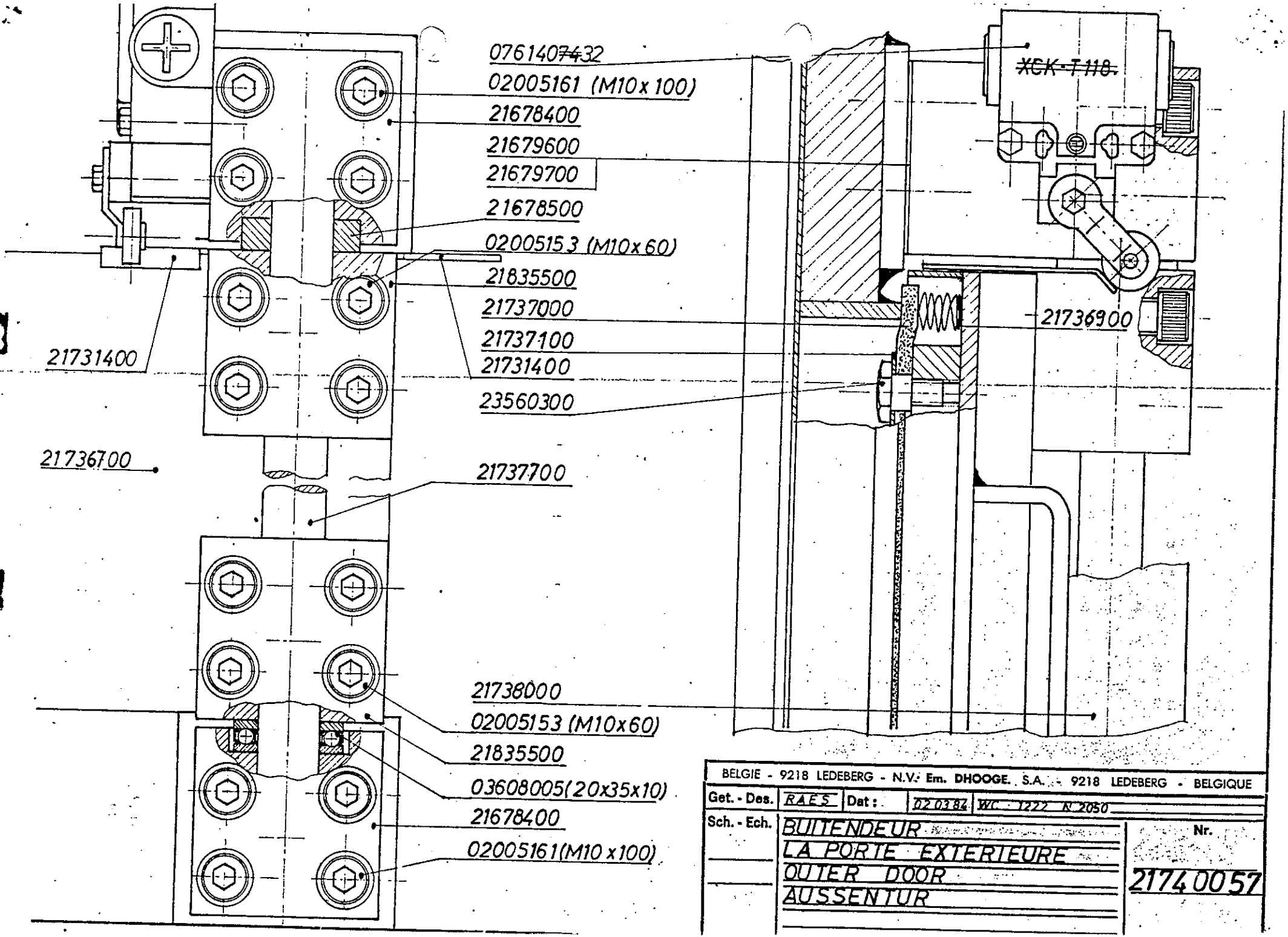
Machine type: WE			N°			
1/1	NAAM NAME	DATUM DATE	N.V. DHOOGE INDUSTRIES B–9050 GENT Belgium	VERVANGT: REPLACES: ZELFDE NR.	DEURSLOT SERRURE DE PORTE DOORLOCK TUERVERSCHLUSS	PLANNUMMER: 235400.14
Getek/Drawn	MUSZGNUG	22-06-04		VERVANGEN DR: REPLACED BY:		
Nagz./Check						

A3

OUTER DOOR LOCK – AUSSENTÜR VERSCHLUβ – SERRURE PORTE INTERIEURE – BUITENDEUR SLOT

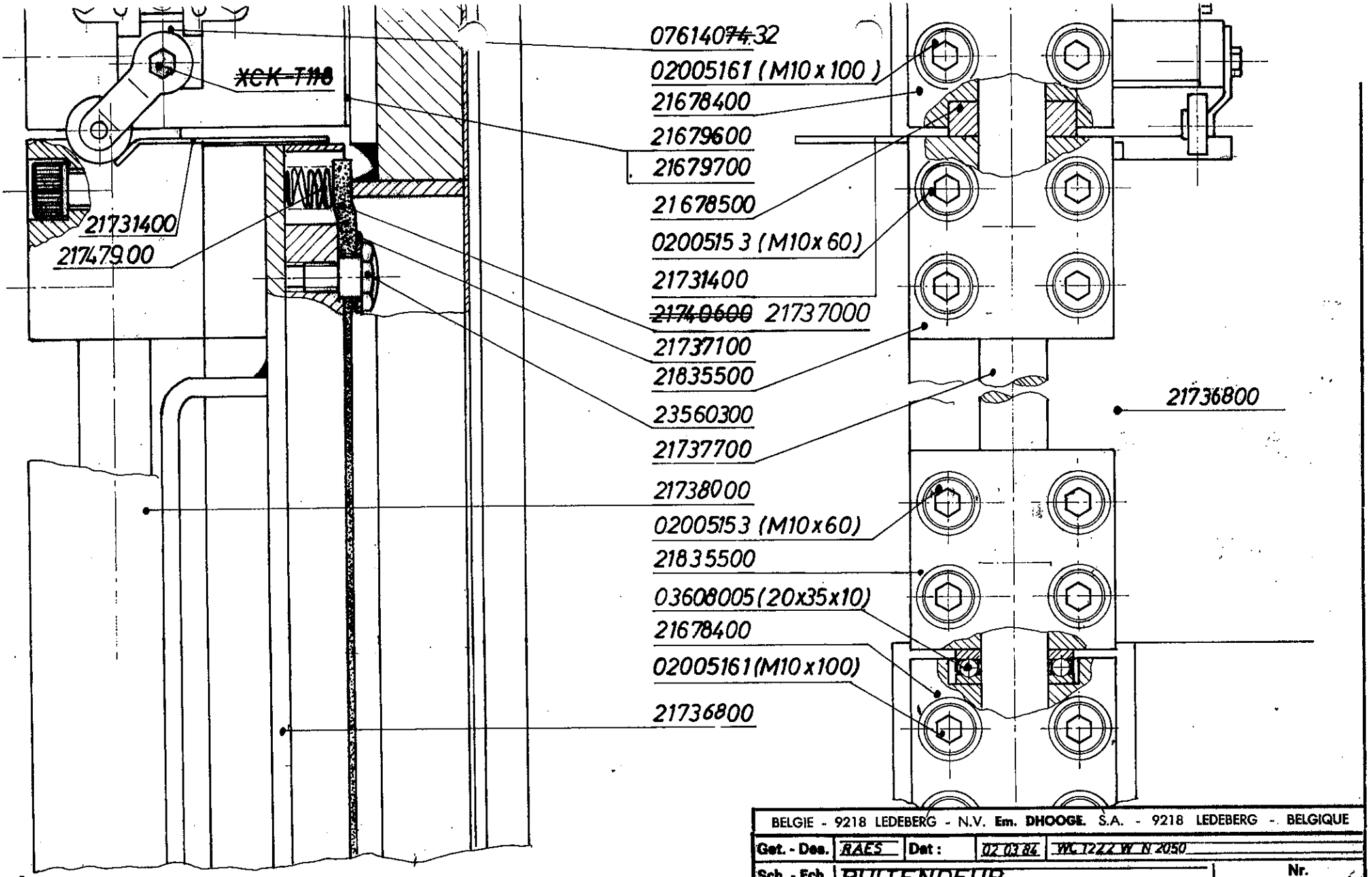


Position No	Quantity	Description	Part No	Picture
	2	Sealring N40-12 Dichtungsring N40-12 Bague d'étanchéité N40-12 Dichtingsring N40-12	03661075	
	1	O-ring 38 x 3 O-ring 38 x 3 Bague O 38 x 3 O-ring 38 x 3	03662287	
	1	Spring Feder Ressort Veer	22411000	
	1	Piston rod Zylinder stange Tige de piston Zuigerstang	23591100	
	1	O-ring 30 x 1,8 O-ring 30 x 1,8 Bague O 30 x 1,8 O-ring 30 x 1,8	03662279	
	1	Hook for door Haken für Tür Crochet pour porte Deurhaak	21836300	
4.1	1	Complete doorlock Komplettes Türverschluβ Serrure complète Volledig buitendeurslot	23540014	
	1	Reed contact Reed Kontakt Contact Reed Reed contact	07614091	



BELGIE - 9218 LEDEBERG - N.V. Em. DHOOGE. S.A. - 9218 LEDEBERG - BELGIQUE

Get. - Des.	RAES	Dat :	02 03 82	WC 1222 N 2050	
Sch. - Ech.	BUITENDEUR LA PORTE EXTERIEURE OUTER DOOR AUSSENTUR				Nr. 21740057



BELGIE - 9218 LEDEBERG - N.V. Em. DHOOGE. S.A. - 9218 LEDEBERG - BELGIQUE

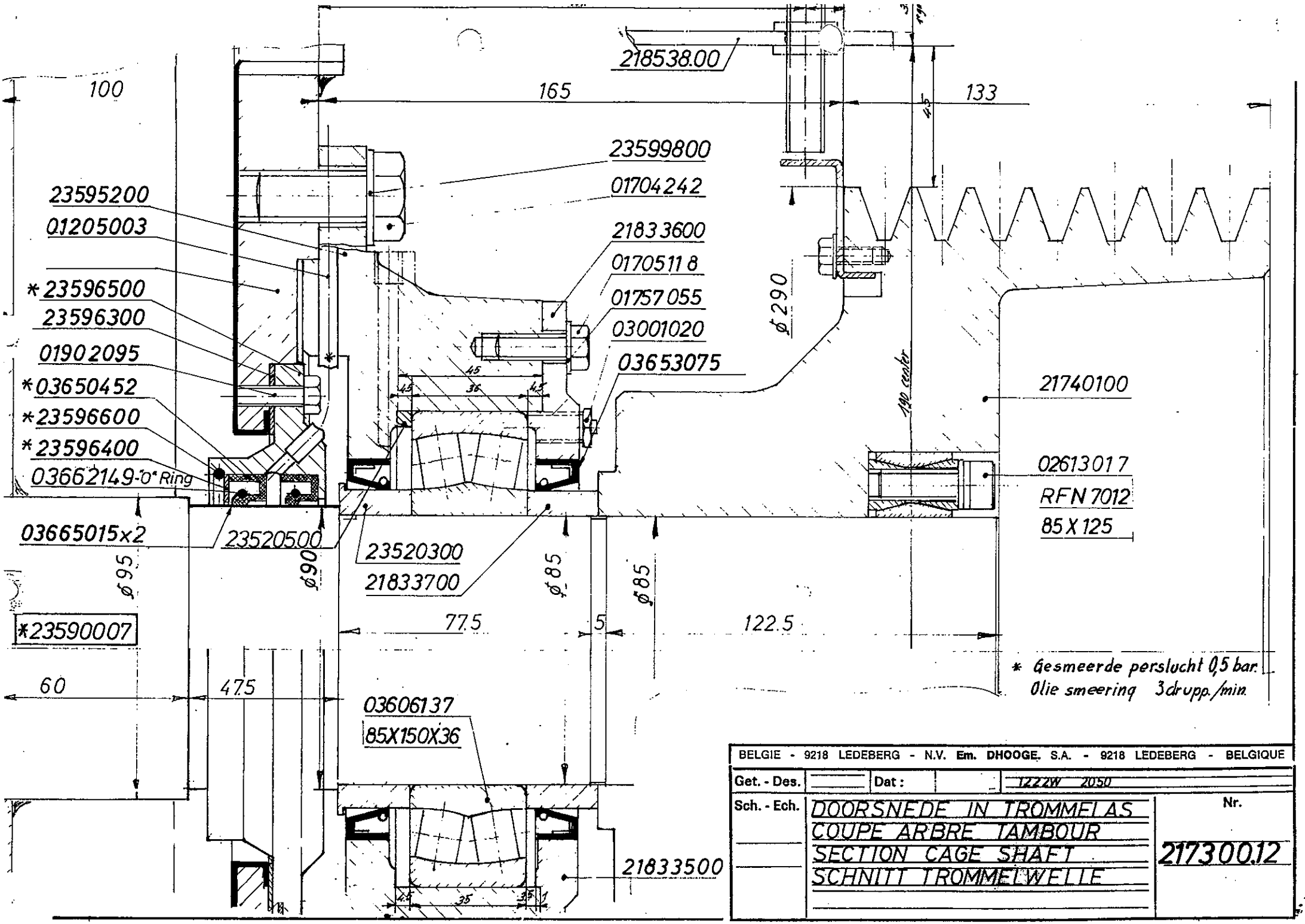
Get. - Dss.	RAES	Dat :	02 03 84	YC 1222 W N 2050
Sch. - Ech.	BUITENDEUR LA PORTE EXTERIEURE OUTER DOOR AUSSENTÜR			Nr. 21740058

OUTER DOOR – AUSSENTÜR – PORTE INTERIEURE – BUITENDEUR

Position No	Quantity	Description	Part No	Picture
	1	Seal loading door & unloading door Dichtung Beladetür & Entladetür Joint porte de chargement et de déchargement Dichting laaddeur en losdeur	21737000	
	1	Band with springs loading door Band mit Federn Beladetür Bande avec ressort porte de chargement Band met veren laaddeur	21736900	
	1	Band with springs unloading door Band mit Federn Entladetür Bande avec ressort porte de déchargement Band met veren losdeur	21747900	
	3 m	Stainless steel springs 10 mm Edelstahl Federn 10 mm Ressorts inox 10 mm Inox veren 10 mm	03317002	
	1	Stainless steel plate Edelstahl Platte Tôle inox Inox plaat	21737100	
	16	Screw Schraube Vis Schroef	23560300	
	1	Hinge shaft Scharnier Stange Arbre charnière Scharnieras	21737700	

OUTER DOOR – AUSSENTÜR – PORTE INTERIEURE – BUITENDEUR

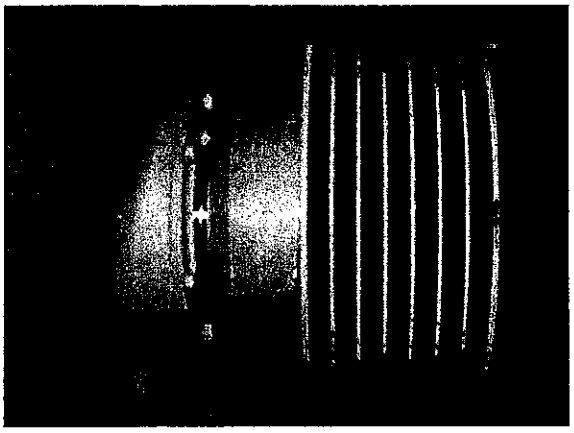
Position No	Quantity	Description	Part No	Picture
	2	Block on door Klotz auf Tür Bloc sur porte Blok op deur	21835500	
	2	Block on frame Klotz auf Frontplatte Bloc sur bâti Blok op freem	21678400	
	1	Bronze ring Bronze Ring Anneau en bronze Bronzen ring	21678500	
	1	Bearing 20 x 35 x 10 Lager 20 x 35 x 10 Roulement 20 x 35 x 10 Lager 20 x 35 x 10	03608005	
	1	Door switch WZF-D Türschalter WZF-D Fin de course porte WZF-D Deurschakelaar WZF-D	07614098	
	1	Shunt for door switch Riegel für Türschalter Pièce de commande contact de poste Bedieningsstuk voor deurkontakt	07614097	
	1	Flexible sleeve Hygienische Manschette Soufflet hygiénique Hygiënische mouw	21838900	

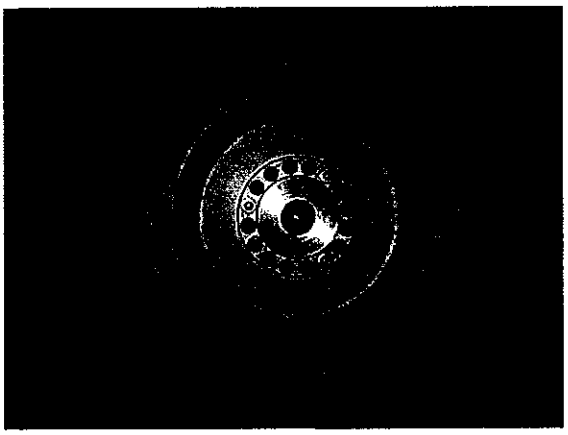


BELGIE - 9218 LEDEBERG - N.V. **Em. DHOOGE** S.A. - 9218 LEDEBERG - BELGIQUE

Get. - Des.		Dat :	12.22W 2050
Sch. - Ech.	DOORSNEDE IN TROMMELAS COUPE ARBRE TAMBOUR SECTION CAGE SHAFT SCHNITT TROMMELWELLE	Nr.	21730012

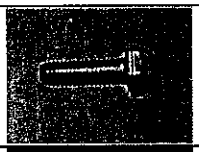
SHAFT SEALS & BEARINGS – TROMMELWELLE DICHTUNG & LAGERUNG
JOINTS & ROULEMENTS ARBRE TAMBOUR – TROMMELAS DICHTINGEN & LAGERING



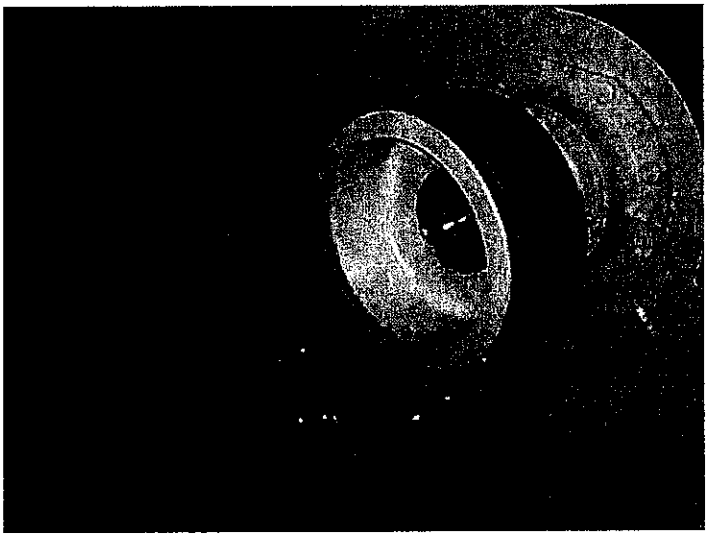


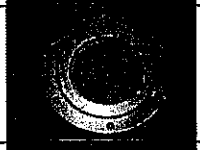
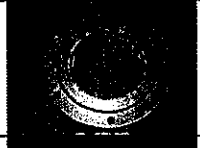
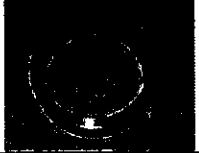
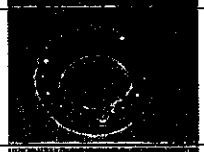
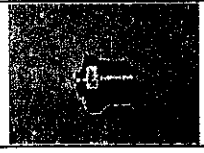
Position No	Quantity	Description	Part No	Picture
	1	Bearing housing Lagergehause Palier Lagerhuis	23595200	
	6	Screw M16 x 40 DIN 933 8.8. Schraube M16 x 40 DIN 933 8.8. Vis M16 x 40 DIN 933 8.8. Schroef M16 x 40 DIN 933 8.8.	01704242	
	6	Security plate Sicherheitsscheibe Plaque de sécurité Veiligheidsplaatje	02203230	
	2m	Copper tube 6 x 4 mm Kupfer Rohr 6 x 4 mm Tube en cuivre 6 x 4 mm Koperen buis 6 x 4 mm	01205003	
	1	Seal Dichtung Joint Dichting	23596300	
	1	Seal housing Dichtungsgehause Logement des joints Dichtingshouder	23596500	
	1	Springring Federring Ressort torique Veerring	23596600	
	1	Disc Scheibe Disque Schijfje	23556400	

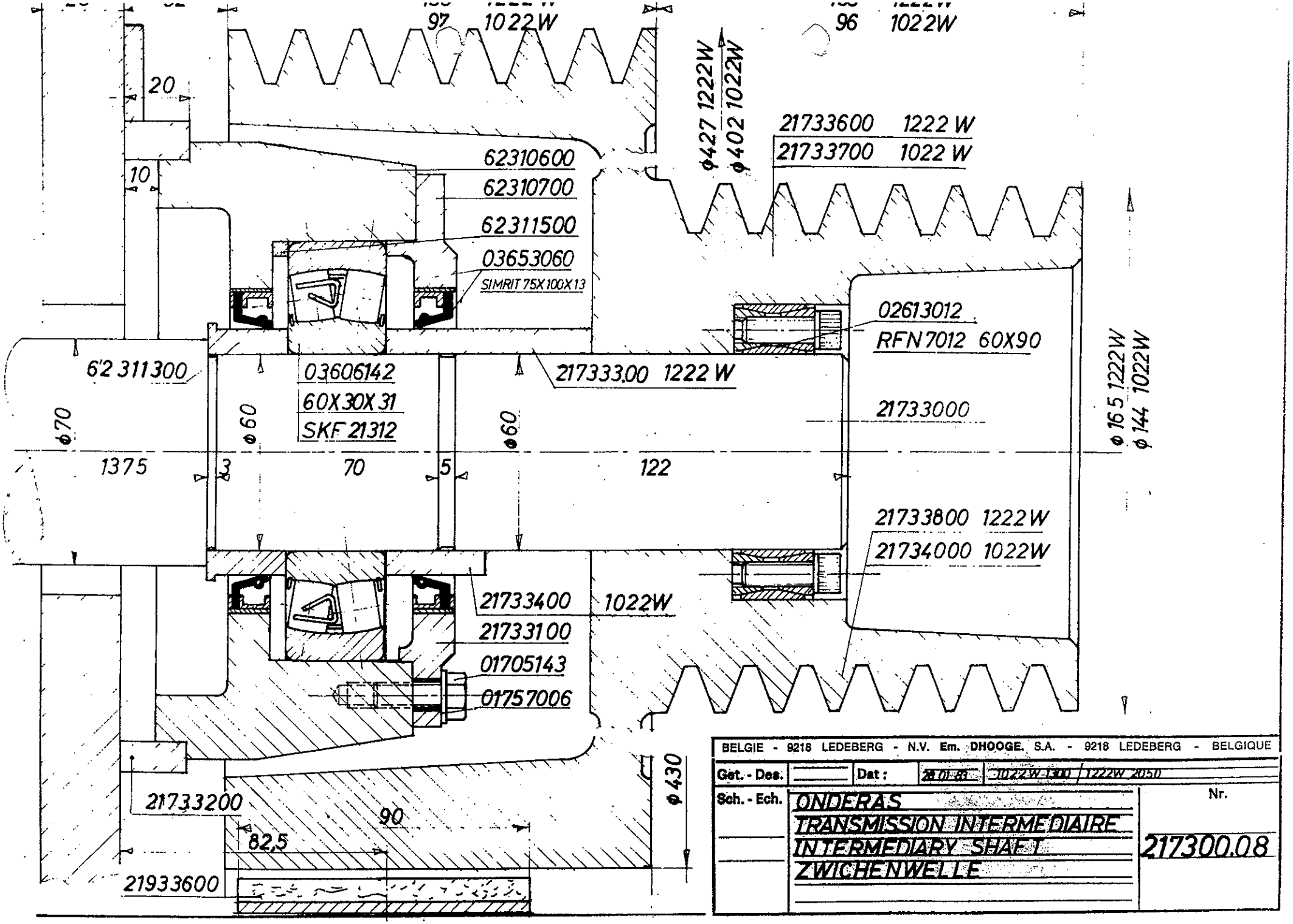
SHAFT SEALS & BEARINGS – TROMMELWELLE DICHTUNG & LAGERUNG
JOINTS & ROULEMENTS ARBRE TAMBOUR – TROMMELAS DICHTINGEN & LAGERING

Position No	Quantity	Description	Part No	Picture
	2	Sealring BA 90 x 110 x 12 Dichtungsring BA 90 x 110 x 12 Bague BA 90 x 110 x 12 Dichtungsring BA 90 x 110 x 12	03650452	
	2	O-ring 95 x 4 mm O-ring 95 x 4 mm Joint torique 95 x 4 mm O-ring 95 x 4 mm	03662145	
	1	Pre assembled seal housing with seals Vormontierte Dichtungsgehause mit Dichtungen Logement avec joints montés Voorgemonteerde dichtingshouder met dichtingen	23590007	
	6	Screw M6 x 20 Schraube M6 x 20 Vis M6 x 20 Schroef M6 x 20	01902093	
	2	Speedy sleeve 90 mm Buchse für Welle 90 mm Buselure protectrice 90 mm Speedy sleeve 90 mm	03665015	
	1	Ring Ring Bague Ring	23520500	
	2	Sealring BA 100 x 120 x 13 Dichtungsring BA 100 x 120 x 13 Bague BA 100 x 120 x 13 Dichtingsring BA 100 x 120 x 13	03653075	
	1	Wearing ring shaft Ring für Trommelwelle Bague palier Span slijtring	23520300	

SHAFT SEALS & BEARINGS – TROMMELWELLE DICHTUNG & LAGERUNG
JOINTS & ROULEMENTS ARBRE TAMBOUR – TROMMELAS DICHTINGEN & LAGERING



Position No	Quantity	Description	Part No	Picture
	1	Roller bearing 22217 C (85 x 150 x 36) Rollenlager 22217 C (85 x 150 x 36) Roulement à tonneaux 22217 C (85 x 150 x 36) Rollager 22217 C (85 x 150 x 36)	03606137	
	1	Cover Deckel Couvercle Deksel	21833500	
	1	Cover Deckel Couvercle Deksel	21833600	
	1	Wearing ring shaft Ring für Trommelwelle Bague palier Span slijtring	21833700	
	2	Locking assembly 85 x 125 mm Spansatz 85 x 125 mm Bague de serrage 85 x 125 mm Klembus 85 x 125 mm	03665015	
	1	Overpressure nipple 1/8 Überdrucknippel 1/8 Nipple de surpression 1/8 Overdruknippel 1/8	03001020	
	1	Set shaft seals and bearing (one side) Satz Welledichtungen und Lagerung (eine Seite) Jeu de joints et roulement (une côté) Set asdichtingen en lager (één zijde)	21720099	



BELGIE - 9218 LEDEBERG - N.V. Em. DHOOGE. S.A. - 9218 LEDEBERG - BELGIQUE

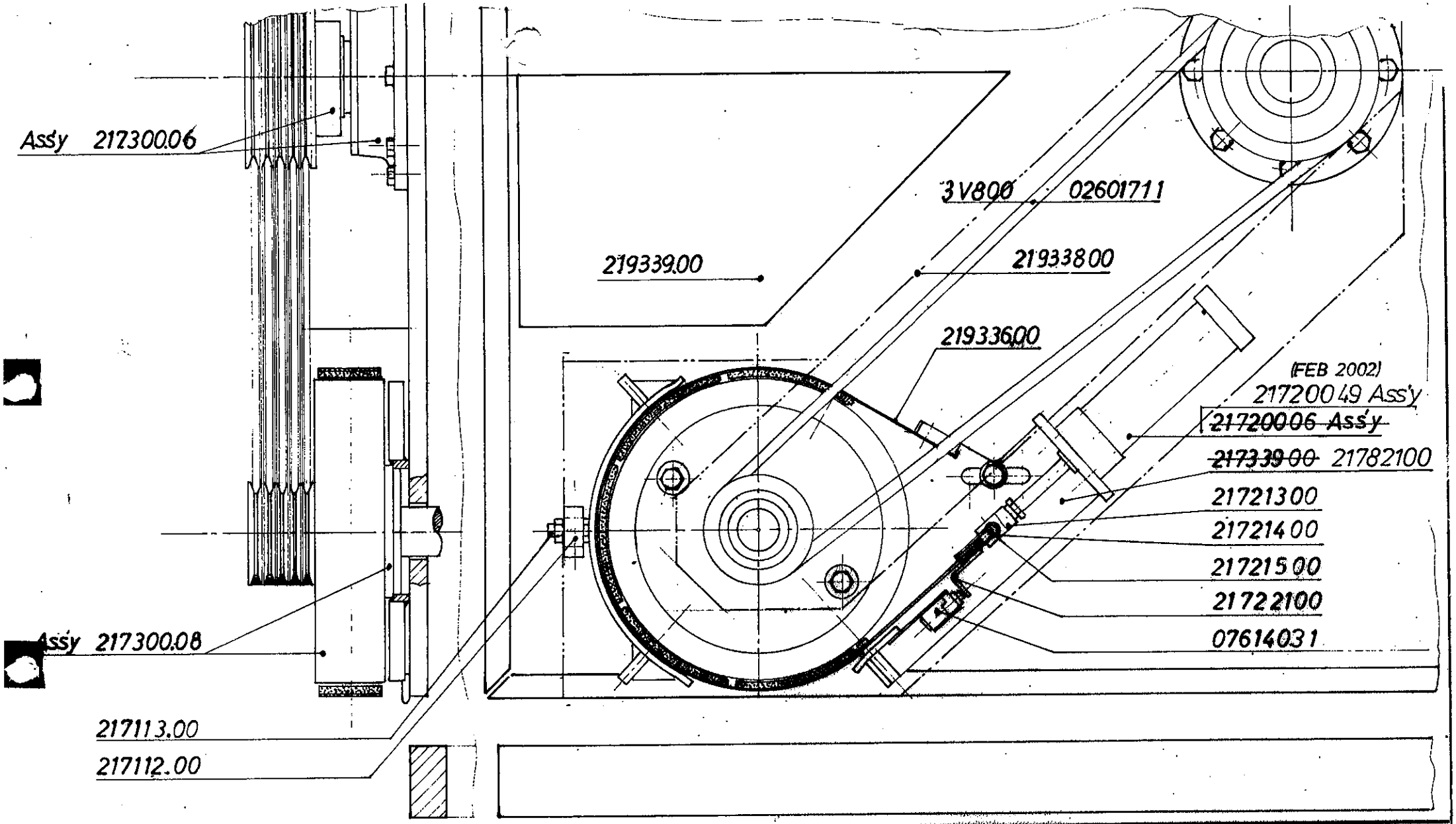
Get. - Des.		Dat :	28 01 66	1022W 1300 / 1222W 2050
Sch. - Ech.	ONDERAS TRANSMISSION INTERMEDIAIRE INTERMEDIARY SHAFT ZWICHENWELLE			Nr. 217300.08

BOTTOM SHAFT – ZWISCHENWELLE – ARBRE INTERMEDIAIRE - ONDERAS

Position No	Quantity	Description	Part No	Picture
	1	Bottom shaft Zwischenwelle Arbre intermédiaire Onderas	21733000	
	1	Bearing housing Lagergehause Palier Lagerhuis	62310600	
	1	Sealring BA 75 x 100 x 13 Dichtungsring BA 75 x 100 x 13 Bague BA 75 x 100 x 13 Dichtingsring BA 75 x 100 x 13	03653060	
	1	Wearing ring Ring für Welle Bague palier Spanslijtring	62311300	
	1	Wearing ring Ring für Welle Bague palier Spanslijtring	21733300	
	1	Roller bearing 21312 (60 x 130 x 31) Roller lager 21312 (60 x 130 x 31) Roulement à tonneau 21312 (60 x 130 x 31) Rollager 21312 (60 x 130 x 31)	03606142	
	1	Cover loading side Deckel Beladeseite Couvercle côté de chargement Deksel laadzijde	62310700	
	1	Cover unloading side Deckel Entladeseite Couvercle côté de déchargement Deksel loszijde	21733100	

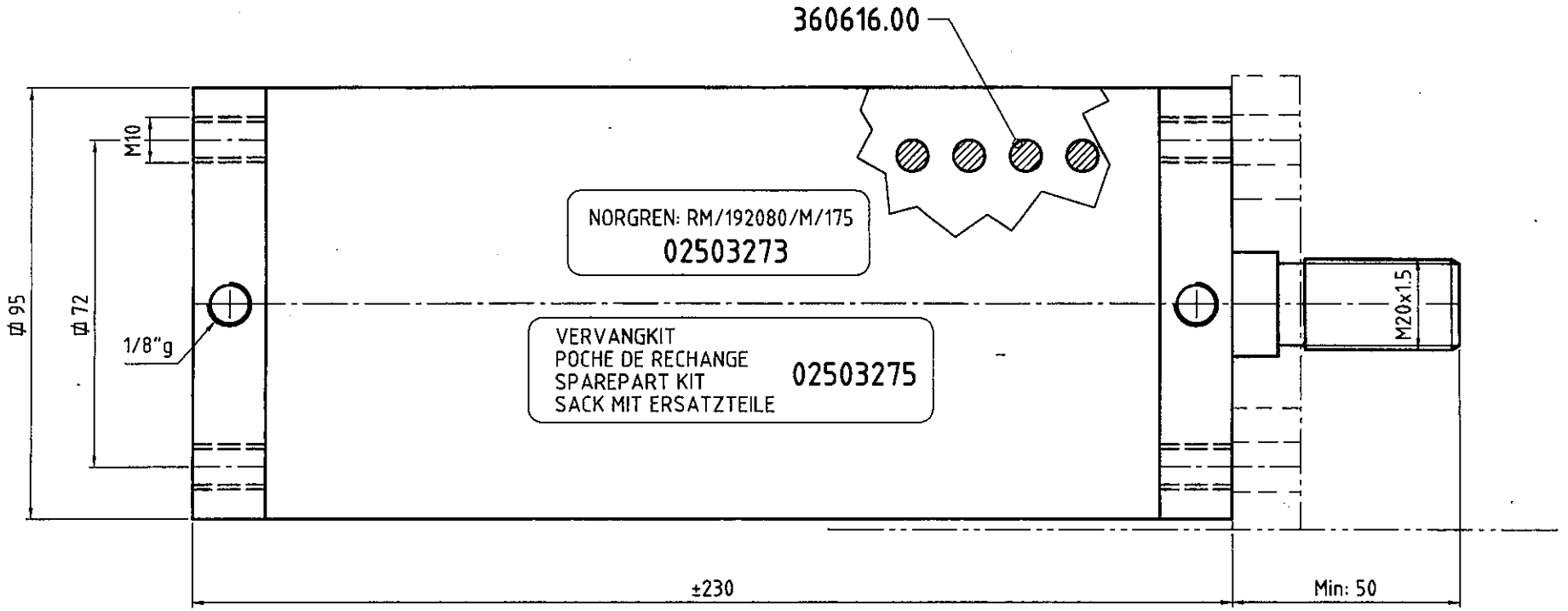
BOTTOM SHAFT – ZWISCHENWELLE – ARBRE INTERMEDIAIRE - ONDERAS

Position No	Quantity	Description	Part No	Picture
	1	Pulley loading side Riemenscheibe Beladeseite Poulie côté de chargement Riemschijf laadzijde	21733600	
	1	Brake pulley unloading side Bremse Riemenscheibe Entladeseite Poulie frein côté de déchargement Rem riemschijf loszijde	21733800	
	1	Locking assembly 60 x 90 mm Spansatz 60 x 90 mm Bague de serrage 60 x 90 mm Klembus 60 x 90 mm	02613012	



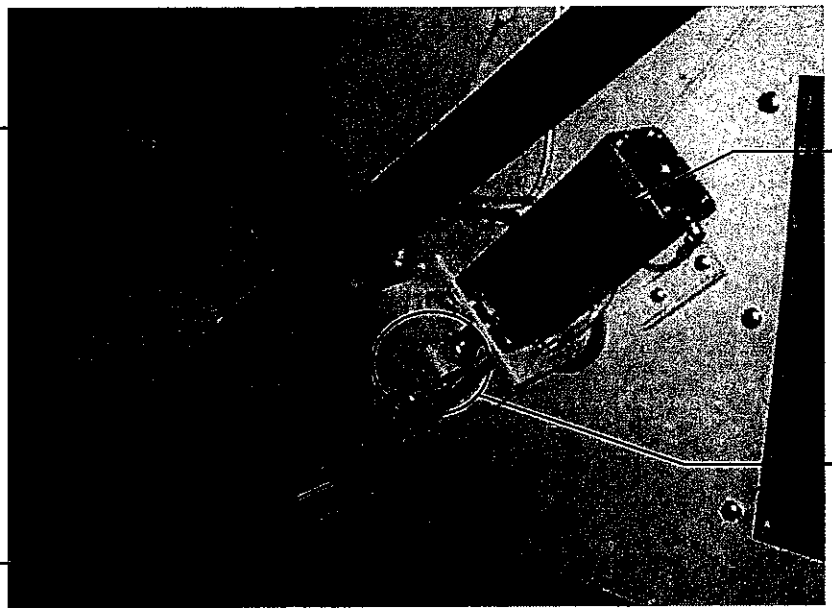
BELGIE - 9218 LEDEBERG - N.V. Em. DHOOGE S.A. - 9218 LEDEBERG - BELGIQUE

Get. - Des.	RAES	Dat:	10.06.84	Type: 1222 W 2050	
Sch. - Ech.	REM OP ONDERAS FREIN SUR TRANSMISS.INTERM. BRAKE ON INTERM.SHAFT BREMSE AUF ZWISCHENWELLE				Nr. 2174.00.75



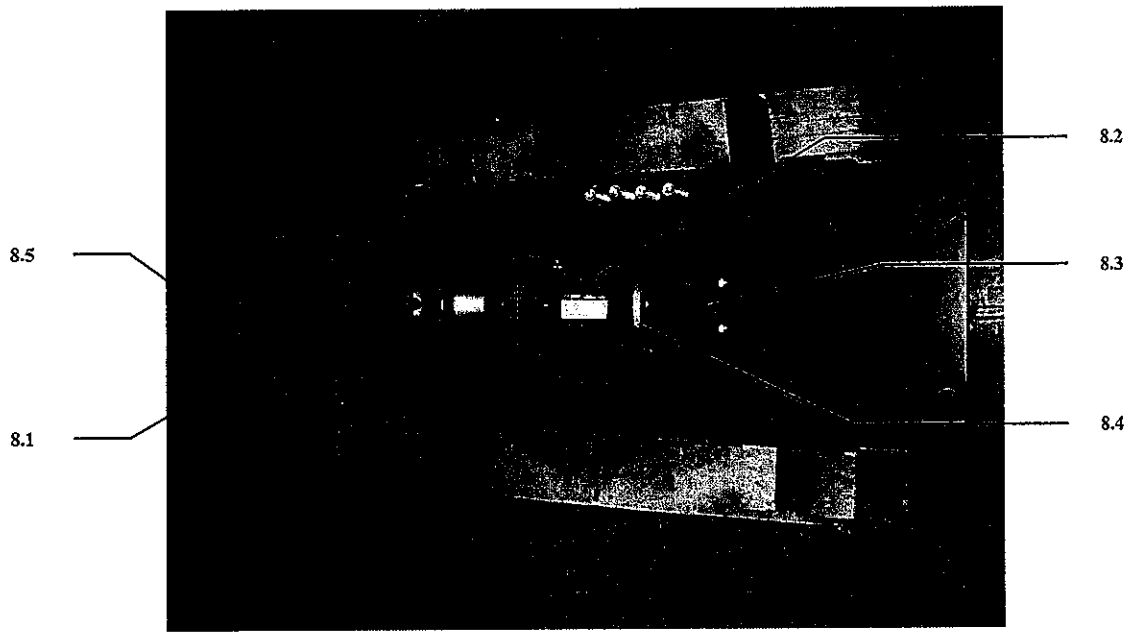
Machine type: WE			N°			
1/1	NAAM NAME	DATUM DATE	N.V. DHOOGE INDUSTRIES B–9050 GENT Belgium	VERVANGT: REPLACES: 217200.06	REMCILINDER CYLINDRE DE FREIN BRAKE CYLINDER BREMSZILINDER	PLANNUMMER: 217200.49
Getek/Drawn	MUSZGNUG	11-12-01		VERVANGEN DR: REPLACED BY:		
Nagz./Check						

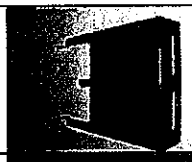
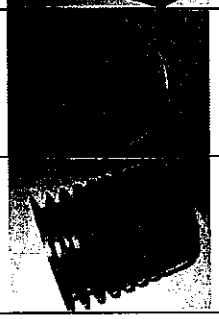
BRAKE – BREMSE – FREIN – REM



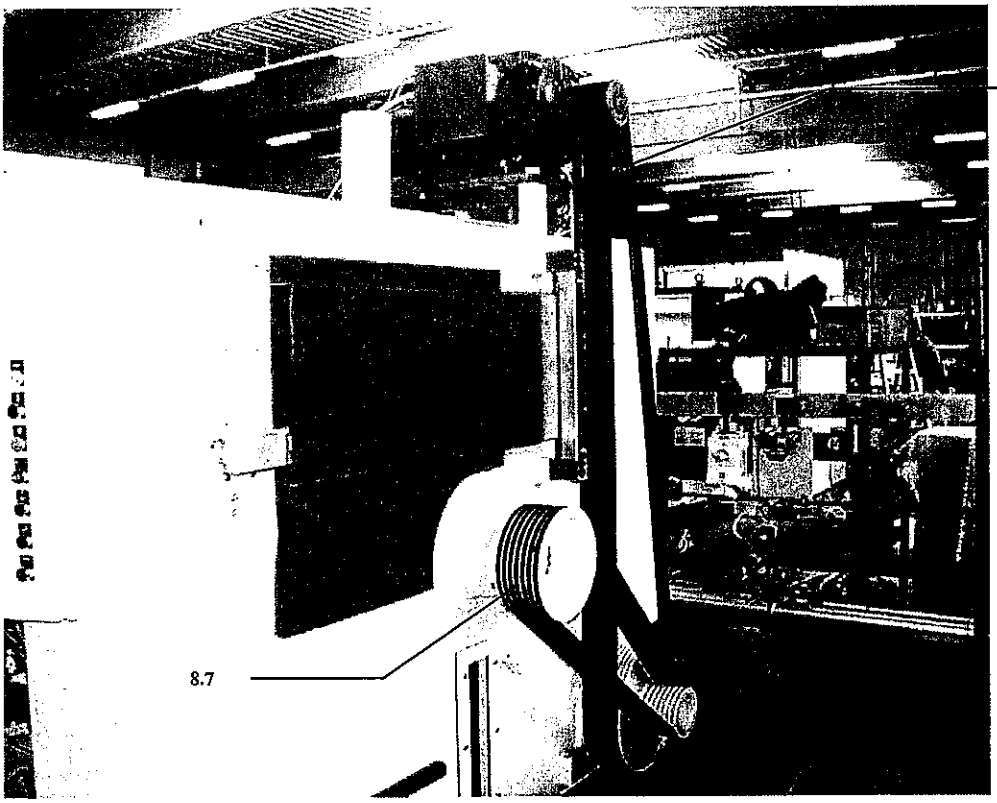
Position No	Quantity	Description	Part No	Picture
7.1	1	Brakeband Bremsband Bande de frein Remband	21933600	
7.2	1	Brake limit switch XCK-M110 Endschalter Bremse XCK-M110 Fin de course frein XCK-M110 Remkontakt XCK-M110	07614031	
7.3	1	Brake cylinder complete Bremszylinder komplet Cylindre de frein Remcylinder	21720049	
	1	Repair set brake cylinder Reparatursatz Bremszylinder Jeu de joints cylinder de frein Set dichtingen remcylinder	02503275	
7.4	1	Shaft Stange Tige Asje	21721500	
7.4	1	Connection piece Verbindungsstück Pièce de connection Verbindingsstuk	21721300	
7.4	1	Hinge Scharniere Charnière Scharnier	21721400	

DRIVE SET UP – ANTRIEB – ENTRAINEMENT - AANDRIJVING

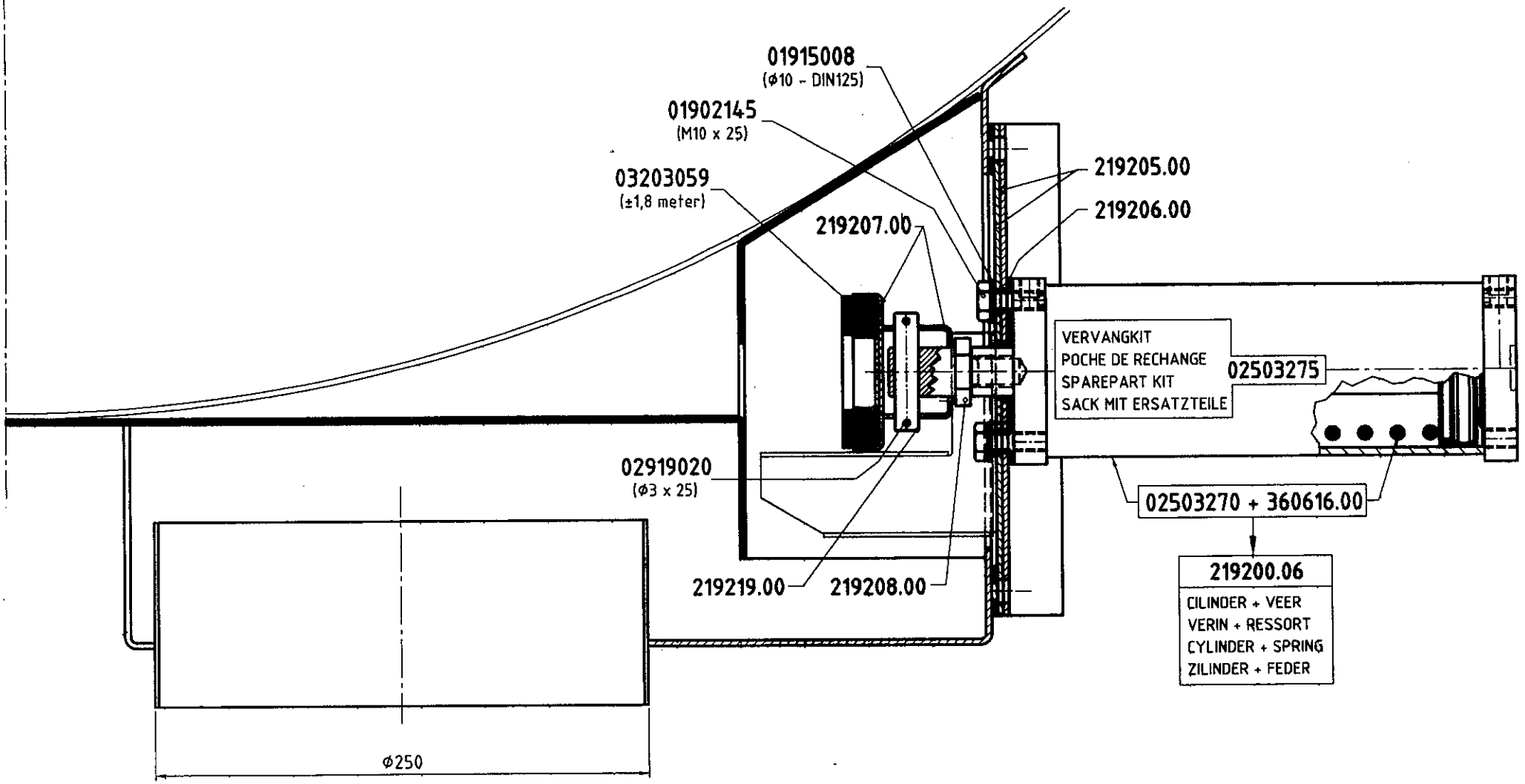


Position No	Quantity	Description	Part No	Picture
8.1	1	Motor 30 kW – 1000 RPM Motor 30 kW – 1000 RPM Moteur 30 kW – 1000 RPM Motor 30 kW – 1000 RPM	07530530	
8.2	1	Fan motor 180 W Kühlmotor 180 W Moteur ventilateur 180 W Koelmotor 180 W	07530526	
	1	Fan wheel Lüfter rad Hélice Koelschoep	07530532	
8.3	1	Support for fan motor Stütz Kühlmotor Support ventilateur Steun koelmotor	21850600	
8.4	1	Clamp Spannbügel Collier Spanband	02814220	
8.5	1	Pulley Riemenscheibe Poulie Riemschijf	21850800 (until 2002) 21853400 (since 2002)	

DRIVE SET UP – ANTRIEB – ENTRAINEMENT - AANDRIJVING

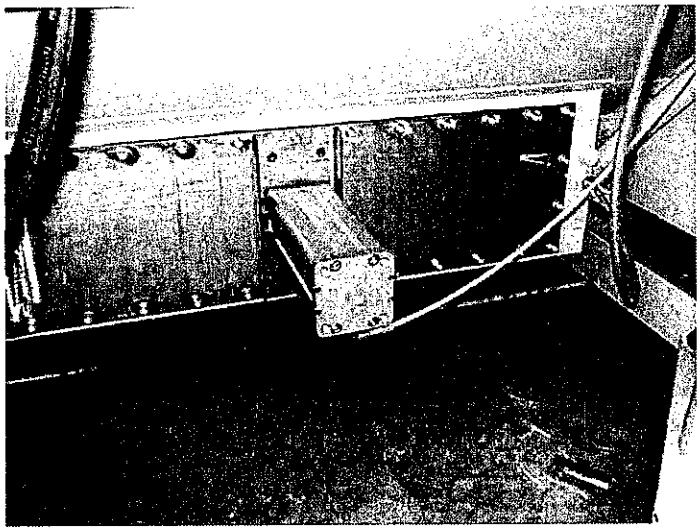


Position No	Quantity	Description	Part No	Picture
8.6	7	V-belts SPB 4750 Keilriemen SPB 4750 Courroie SPB 4750 V-riemen SPB 4750	02601811	
8.7	14	V-belts SPB 2650 Keilriemen SPB 2650 Courroie SPB 2650 V-riemen SPB 2650	02601800	
	1	Belt cover loading side Abdeckung Keilriemen Beladeseite Protection courroies côté de chargement Riemscherm laadzijde	21838500	
	1	Belt cover unloading side Abdeckung Keilriemen Entladeseite Protection courroies côté de déchargement Riemscherm loszijde	21933800	



Machine type: 1022/1222/1422			N° 1300/2050/2910			
1/2	NAAM NAME	DATUM DATE	N.V. DHOOGE INDUSTRIES B–9050 GENT Belgium	VERVANGT: REPLACES: 216600.03	UITLAATKLEP CLAPET DE VIDANGE DRAINVALVE ABLASSVENTIL	PLANNUMMER: 219200.65
Getek/Drawn	MUSZGNUG	23-01-2002		VERVANGEN DR: REPLACED BY:		
Nagz./Check						

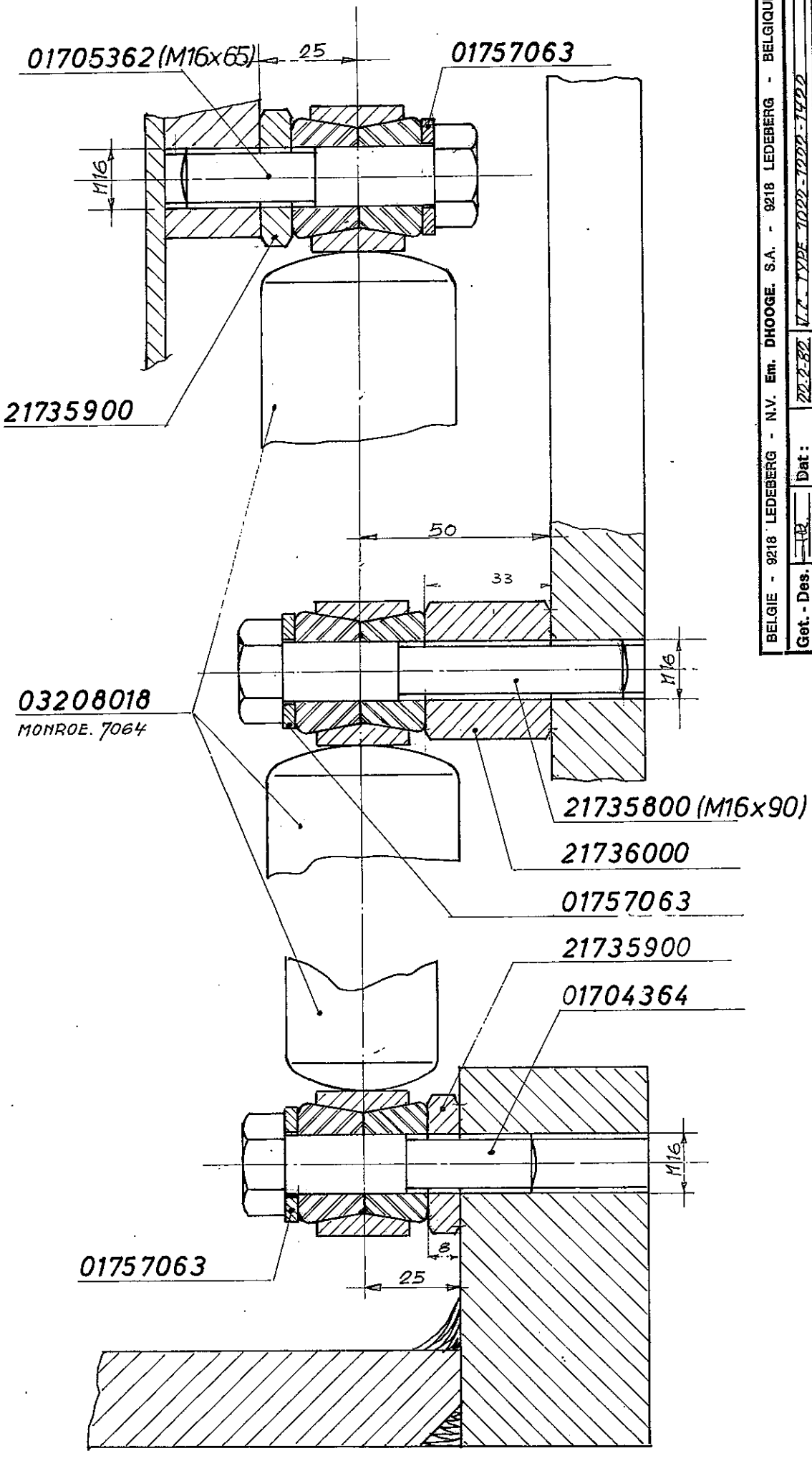
DRAIN VALVE N.O. – ABLAß VENTIL N.O. – CLAPET DE VIDANGE N.O. – UITLAATKLEP N.O.



Position No	Quantity	Description	Part No	Picture
	1	Drain cylinder with spring Ablaßzylinder mit Feder Vérin de vidange avec ressort Uitlaatcylinder met veer	21920006	
	1	Repair kit CNOMO cylinder Reparatursätz CNOMO Zylinder Pochette de joints vérin CNOMO Set dichtingen CNOMO cylinder	02503275	
	1	Pen Stift Tige Pen	21921900	
	1	Bridge for seal Brucke für Dichtung Support pour joint Brug voor dichting	21920700	
	1,8 m	Drain seal Ablaßdichtung Joint de vidange Uitlaatdichting	03203059	
	1	Valve screw Ventilschraube Vis intermédiaire Klepbout	21920800	
	1	Split pin 3 x 25 Splinte 3 x 25 Goupille 3 x 25 Splitpen 3 x 25	02919020	

DRAIN VALVE N.O. – ABLAβ VENTIL N.O. – CLAPET DE VIDANGE N.O. – UITLAATKLEP N.O.

Position No	Quantity	Description	Part No	Picture
	4	Screw M 10 x 25 Schraube M 10 x 25 Vis M 10 x 25 Vijs M 10 x 25	01902145	
	1	Plate for drain cylinder Platte für Ablaβzylinder Tôle pour vérin de vidange Plaat voor uitlaat cylinder	21920500	
	1	Seal for plate Dichtung für Platte Joint pour tôle Dichting voor plaat	21920600	
	1	Drain hose Ø 250 mm x 300 mm Ablaβ schlauch Ø 250 mm x 300 mm Flexible de vidange Ø 250 mm x 300 mm Uitlaat mouw Ø 250 mm x 300 mm	48813300	
	1	Clamp Ø 250 mm Spannband Ø 250 mm Collier Ø 250 mm Spanband Ø 250 mm	48818300	
	1	Rubber seal 480 x 480 mm Gummi Dichtung 480 x 480 mm Joint caoutchou 480 x 480 mm Rubber dichting 480 x 480 mm	21949500	



BELGIE - 9218 LEDEBERG - N.V. Em. DHOOGE. S.A. - 9218 LEDEBERG - BELGIQUE

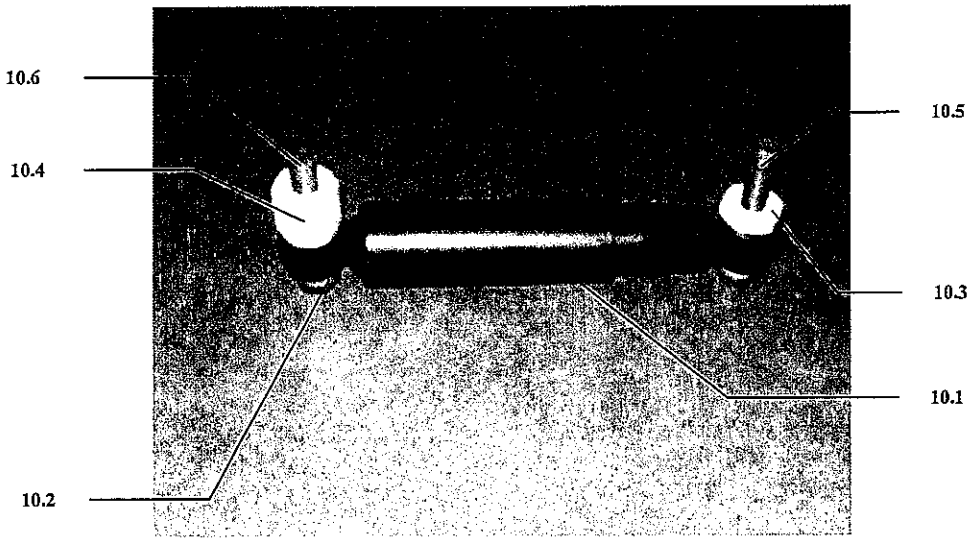
Get. - Des.	HR	Dat:	22-2-82
Sch. - Ech.			

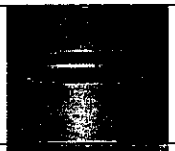
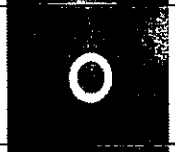
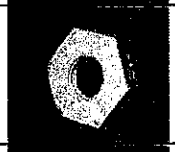
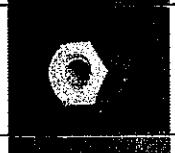
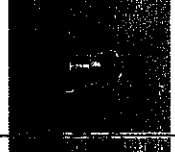
VLC TYPE 1022-1022-1422

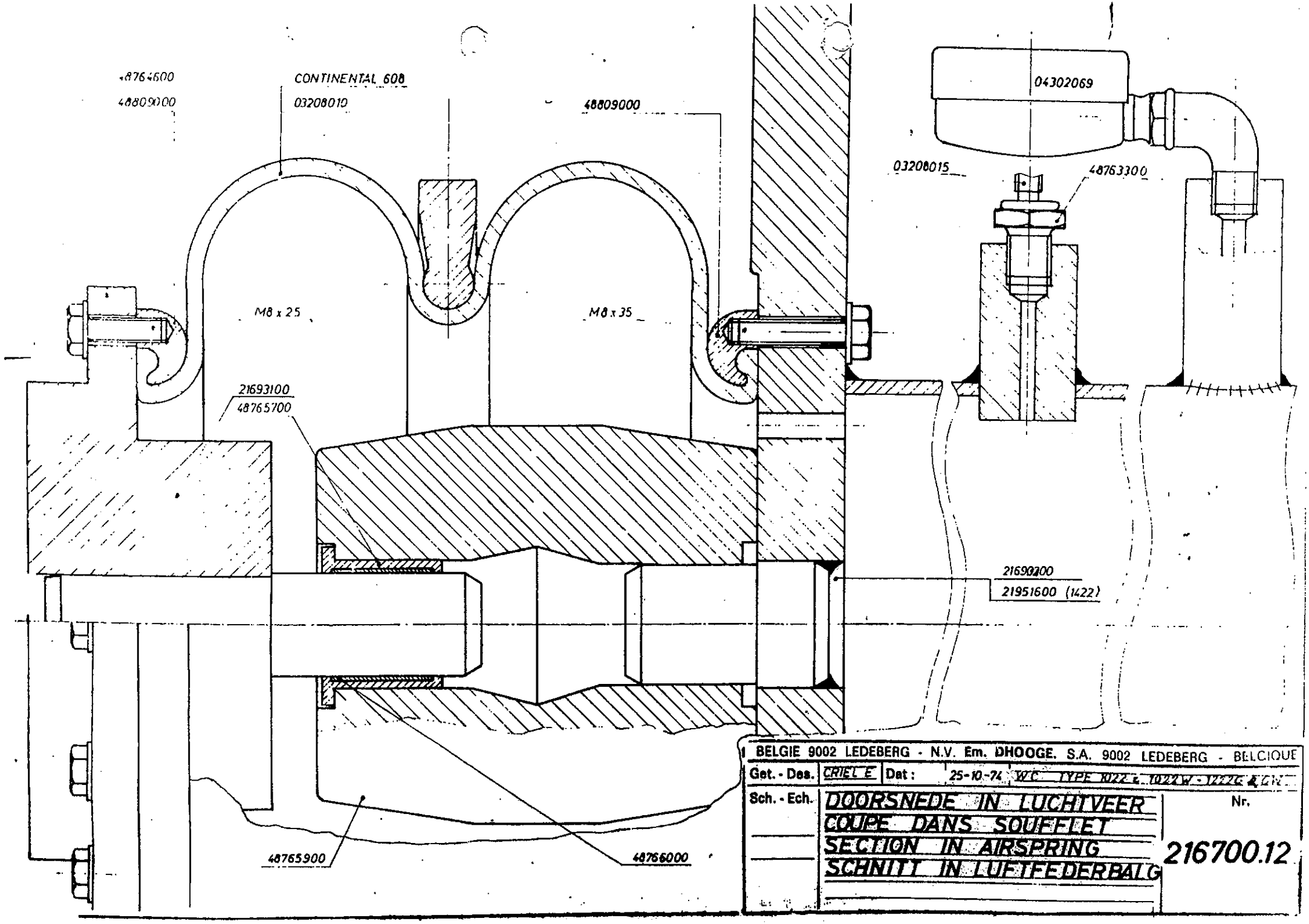
Nr. 21730002

MONTAGE SCHOKDEMPER
MONTAGE AMORTISSEUR
SET-UP SHOCKABSORBER
MONTAGE STOSSDÄMPFER

SUSPENSION – AUFHÄNGUNG – SUSPENSION - OPHANGING



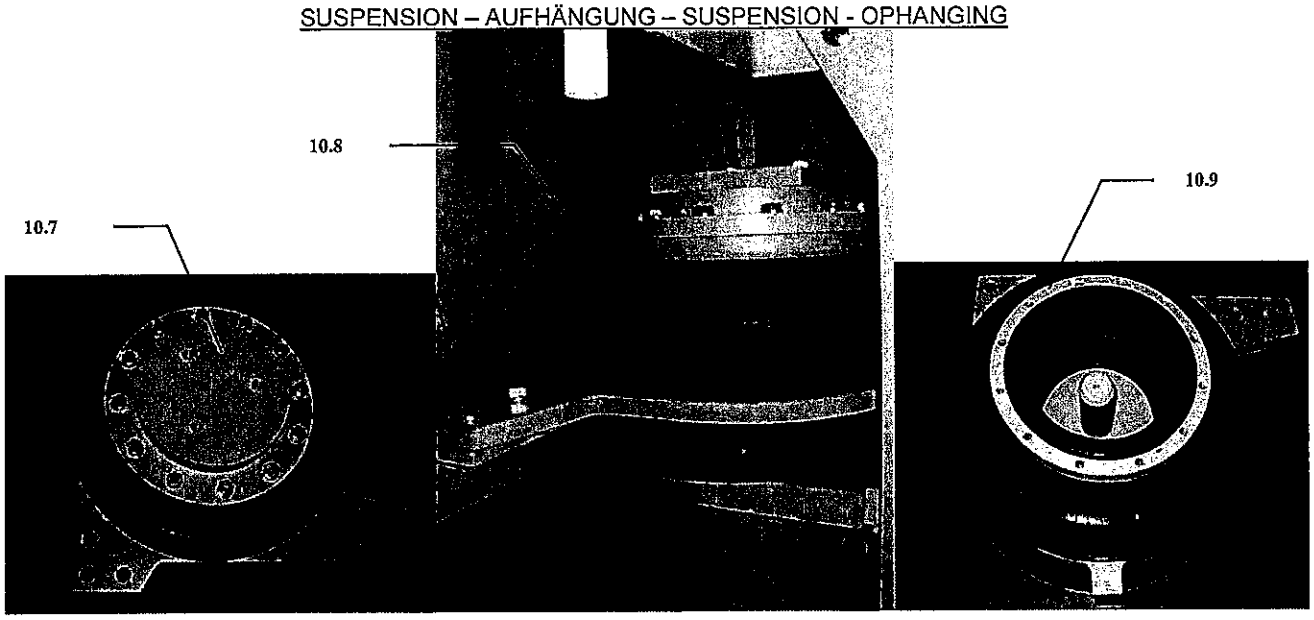
Position No	Quantity	Description	Part No	Picture
	1	Manometer 6 bar – 63 mm Manometer 6 bar – 63 mm Manomètre 6 bar – 63 mm Manometer 6 bar – 63 mm	04302069	
10.1	1	Shock absorber Stoßdämpfer Amortisseur Schokdemper	03208018	
10.2	2	Washer Scheibe Rondelle Rondeel	01757063	
10.3	1	Nut M16 Mutter M16 Ecrou M16 Moer M16	21735900	
10.4	1	Nut M16 Mutter M16 Ecrou M16 Moer M16	21736000	
10.5	1	Screw M16 x 65 Schraube M16 x 65 Vis M16 x 65 Schroef M16 x 65	01704364	
10.6	1	Screw M16 x 90 Schraube M16 x 90 Vis M16 x 90 Schroef M16 x 90	21735800	

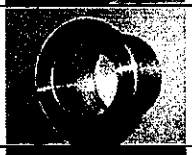


BELGIE 9002 LEDEBERG - N.V. Em. DHOOGE. S.A. 9002 LEDEBERG - BELGIQUE

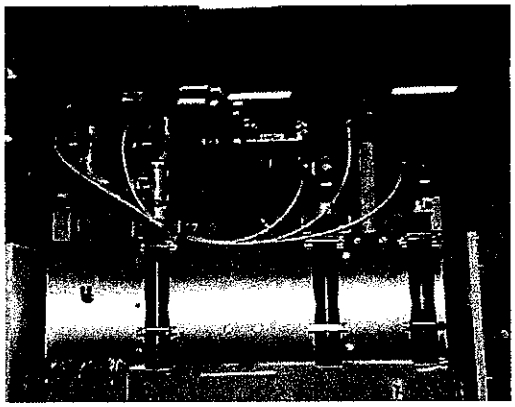
Get. - Des.	CRIEL E	Dat :	25-10-74	W.C.	TYPE 1022 & 1022 W - 1222 C & CN
Sch. - Ech.	DOORSNEDE IN LUCHTVEER COUPE DANS SOUFFLET SECTION IN AIRSPRING SCHNITT IN LUFTFEDERBALG			Nr.	216700.12

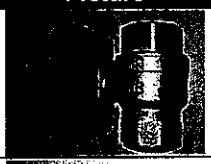
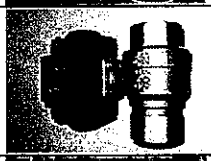
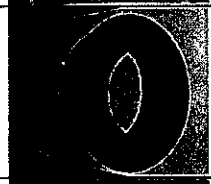
SUSPENSION – AUFHÄNGUNG – SUSPENSION - OPHANGING



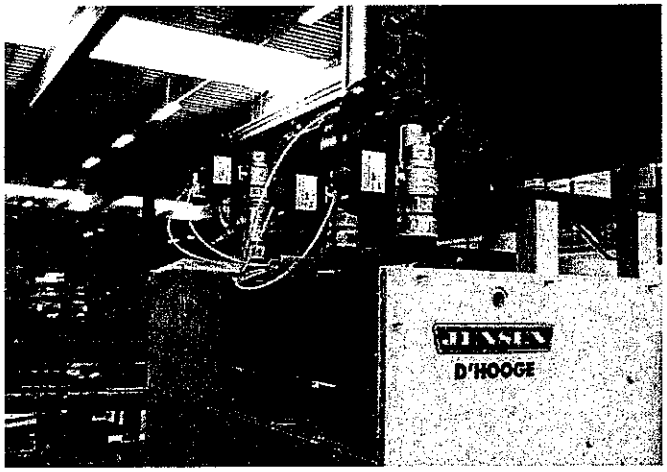
Position No	Quantity	Description	Part No	Picture
	1	Silent bloc suspension Bumper Aufhängung Silentbloc suspension Veiligheidscomputer	48765900	
	1	Bushing suspension Buchse Aufhängung Bague suspension Bus ophanging	48765700	
	1	Teflon lining suspension Teflon Aufhängung Guide en teflon suspension Voering ophanging	48766000	
10.7	1	Top plate air spring Oberteil Luftfeder Couvercle coussin pneumatique Bovenplaat luchtveer	21693100	
10.8	1	Air spring Gummifeder Coussin pneumatique Rubberen luchtveer	21693100	
10.9	2	Retaining ring Spanring Bague de suspension Spanring	48809000	
	1	Air inlet Lufteinlaß Soupape de suspension Luchtventiel ophanging	48763300	

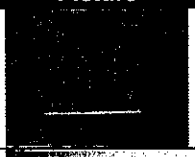
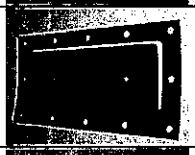
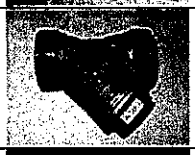
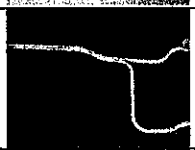
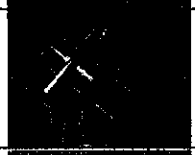
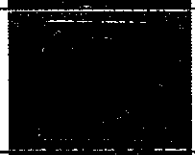
WASSER AND STEAMINLET – WASSER UND DAMPEINLAß
ENTREES D'EAU ET DE VAPEUR – WATER EN STOOMINLAAT



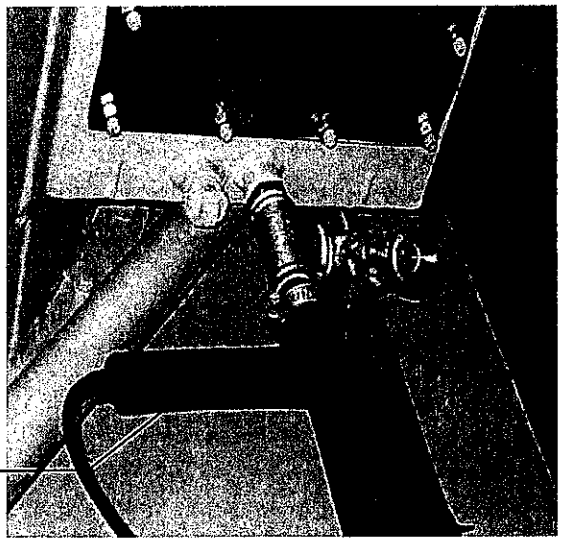
Position No	Quantity	Description	Part No	Picture
	3	Pneumatic waterinlet valve 2" Pneumatisch Wassereinlaβventil 2" Vanne entrée d'eau pneumatique 2" Pneumatische waterinlaatkraan 2"	02503454	
	1	Pneumatic waterinlet valve 1 ½" (option) Pneumatisch Wassereinlaβventil 1 ½" (option) Vanne entrée d'eau pneumatique 1 ½" (option) Pneumatische waterinlaatkraan 1 ½" (option)	02503453	
	1	Triple water inlet valve 220 VAC Dreifachwasserinlaβventil 220 VAC Tripple vanne d'entrée d'eau 220 VAC Trippel waterinlaatventiel 220 VAC	07616074	
	1	Pneumatic steam and watervalve 6/4" Pneumatisch Dampf und Wasserventil 6/4" Vanne vapeur et eau pneumatique 6/4" Pneumatische stoom- en waterkraan 6/4"	02505013	
	1	Four compartment product hopper Waschmittelbehälter mit 4 Kammern Bac à produits avec 4 compartiments Produktenbak met 4 kamers	24511900	
	3	Liquid product container Behälter für flüssige Produkten Bac à produits liquides Bak voor vloeibare procukten	21680600	
	1	Flexible hose water inlet 150 mm Schlauch für Wassereinlaβ 150 mm Flexible entré d'eau 150 mm Mouw voor waterinlaat 150 mm	48867800	
	2	Clamp Spannband Collier Spanband	02814220	

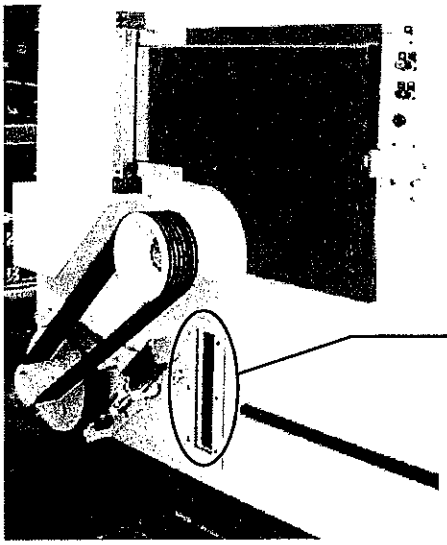
WASSER AND STEAMINLET – WASSER UND DAMPEINLAß
ENTREES D'EAU ET DE VAPEUR – WATER EN STOOMINLAAT



Position No	Quantity	Description	Part No		Picture
	1	Stainless steel inlet pipe Ø 150 mm Edelstahl Einlaßrohr Ø 150 mm Tube d'entrée en inox Ø 150 mm Inox inlaat buis Ø 150 mm	21738500		
	1	Seal for inlet pipe 155 x 285 mm Dichtung für Einlaßrohr 155 x 285 mm Joint pour tube d'entrée 155 x 285 mm Dichting voor inlaatbuis 155 x 285 mm	48704000		
	1	Steam filter 6/4" Dampffilter 6/4" Filter de vapeur 6/4" Stoomfilter 6/4"	02402006		
	1	Steam pipe 6/4" Dampfrohr 6/4" Tube de vapeur 6/4" Stoombuis 6/4"	21947200		
	2	Steam hose 1" Dampfschlauch 1" Flexible de vapeur 1" Stoomflexibel 1"	21947300		
	2	Steam injector 1" Dampfdüse 1" Inecteur de vapeur 1" Geluidsdemper 1"	62744800		
	2	Seal Dichtung Joint Dichting	62268400		
	1	Level glas Schauglas Voyant de niveau Peilglas	20338000		

WASSER AND STEAMINLET – WASSER UND DAMPEINLAß
ENTREES D'EAU ET DE VAPEUR – WATER EN STOOMINLAAT





Position No	Quantity	Description	Part No	Picture
12.1	1	Seal Dichtung Joint Dichting	20332100	
12.1	1	Seal Dichtung Joint Dichting	21837900	
12.1	1	Frame levelglas Rahm Schauglas Cadre voyant de niveau Kader peilglas	21837000	
	1	Venting hose Ø 130 mm Entluftumpschlauch Ø 130 mm Flexible desaeration Ø 130 mm Ontluchtingsmouw Ø 130 mm	21682700	
12.2	1	Level hose Niveauschlauch Tube caoutchou niveau Peil dam	62202700	

TROUBLE SHOOTING WASHING SPLIT POCKET WASHER EXTRACTOR WE980 –1300 – 2050 – 2910SP&HSP

PROBLEM	REASON OR ORIGIN	WHAT TO DO
A.During extraction machine is switched off by tilt switch (out of balance)	1.Not all compartments loaded	-All compartmnts should be loaded.
	2.Compartments unevenly loaded	-All compartments should be loaded with the same quality and same weight..
	3.Load is tangled (ball forming) due to too low washing speed mainly on 2 pocket drums. Check rotation frequency on F4, should be about 6Hz.	-Drive motor defective, replace motor -Check programmation of washing speed, should be 90% for cotton sheets. -Frequency converter defective, replace frequency converter. -Output signal 0-10VDC (PC30/PS40) too low or print defective, replace programmer print. -Wrong parameter settings in frequency converter, load correct parameters in frequency converter. (See chapter VII) -V-belts are slipping, replace V-belts or tension V-belts.
	4.Tangling or ball forming of cotton sheets in large 2 pocket drums.	-Program drum stop in start of cycle. (No drum rotation with dry linen) -Program drain speed during each drain and be sure there is no drum stop before start drain speed. -Mix large sheets with small pieces or nets.
	5.Incorrect adjustment of tilt switch.	-Check position and installation of tilt switch and actuating piece. (See chapter VIII)
	6.Out of balance switch defective or loose electrical connection or defective electric cable.	-Check or replace out of balance switch -Check connections inside tilt switch -Check or replace cable between programmer and out of balance switch.
	7.Shock absorbers used, broken or unscrewed.	-Check or replace shock absorbers, or install screws properly.
	8.Springs used, broken or wrongly adjusted (only WE980SP) or air springs incorrectly blowed up.	-Check center height, replace or adjust springs. -Check pressure in each air cushion. -Check machine level, see starting up instructions Chapter IV. -Machine should be horizontal on the 4 sides.

TROUBLE SHOOTING WASHING SPLIT POCKET WASHER EXTRACTOR WE980 –1300 – 2050 – 2910SP&HSP

	9.No drain speed before extraction	-See electrical trouble shooting point H.
B.Linen still dirty at the end of the cycle	10.Wrong washing cycle used.	-Restart correct washing cycle.
	11.No chemicals were added during washing cycle.	-Put chemicals in producthopper before starting washing cycle. -Check working of tilting and liquid containers. -Check working dosing pumps. -Chech hose between pumps and machine for obstructions. -Liquid chemical containers are empty. -Check programmation of dosing pumps.
	12.Water level too high during washing resulting in reduced mechanical action.	-Water level wrongly programmed, level hose or connection blocked, level switch defective on PC30/PS40, replace print.
	13. Water level increases during steaming.	-Too much condensate in steam, check working end of line steam trap or capacity of steam boiler too low. Install locking system on steam inlets of different washer extractors.
	14.Drain valve do not open during cycle and no fresh water is added.	-Air valve Yui defective. -Drain valve mechanical blocked -No signal to drain valve Yui, check valve in air line 9 and output on print..
	15. Water level too low because drain valve do not close completely.	-Check pressure in line 9, check and clean drain valves and replace if needed. -Check working of valve Yui.
	16.No mechanical action, washing speed too low or too high.	-Check dropping action in drum and programmed washing speed. -Belts are slipping, tension V-belts.
	17.Rubber seals or hoses are chemical corroded.	-Check concentration of chemicals and dilute if possible. -Use seals and hoses of a higher quality (Viton, plastic tubes,....)
	18. Dirt is coming in machine during water inlet or steam inlet.	-Check water and steam piping.
	19. Dirt is coming in machine from venting pipes or tube.	-Check venting connections.

TROUBLE SHOOTING WASHING SPLIT POCKET WASHER EXTRACTOR WE980 –1300 – 2050 – 2910SP&HSP

	20.Dirt particles were entering the machine during loading. 21.Temperature has not been reached.	-Check linen before loading and avoid that pencils or inkt cartrdges enter in the drum. -Check working of steam valve and steam supply line.
C.Load is hard to unload due to tangling of linen.	30.See points 3 and 4.	
D.Linen still wet after extraction.	40.Wrong washing cycle used. 41.Full extract speed not reached.	-Restart correct washing cycle. -Check frequency on F4 display during extraction, eventually reprogram extraction speed on PC30/PS40 or reprogram parameters in frequency converter. -Motor does not reach max speed (torque too low), install new motor. -Frequency converter defective, install new preprogrammed frequency converter. -Output signal 0-10VDC (PC30/PS40) too low, replace print.
	42.Drain water is not removed properly.	-Drain valves are not opening or do not open completely, check valves. -Rotation during extraction is opposite, change connection on frequency converter terminals.. -Drain pipig is partly blocked, clean piping.
	43.Water inlet valve not closing 100%.	-Repair or replace leaking water inlet valve; -Leaking solenoid valve for water valve, repair or replace solnoid valve.
	44.Steam valve not closing 100%.	-Repair or replace steam inlet valve. -Leaking solenoid valve, repair or replace solenoid valve.
F.Colour and smell of linen is not acceptable	50.Wrong washing cycle used. 51.Incorrect chemical dosing. 52.Water or steam supply unclean.	-Restart correct washing cycle. -See point 11. -Check water and steam supply lines.

TROUBLE SHOOTING WASHING SPLIT POCKET WASHER EXTRACTOR WE980 –1300 – 2050 – 2910SP&HSP

G.P/C linen too much wrinkled.	60.Wrong washing cycle used.	-Restart correct washing cycle.
	61.Drum overloaded with P/C articles.	-Respect a max. load ratio of 1:15 for P/C garments.
	62.Temperature too high.	-Check programmed remperature. -Check accuraty of tempearture control, replace temperature sensor.
	63.Cool Down not effective.	-Check programming Cool Down and adapt programming. -Cold water inlet too fast, reduce Cool Down flow by closing hand valve.
	64.Water level too low	-Check and adapt programmed water level. -Check and clean level hose connection. -Level swich defective, replace PC30/PS40 print.
	65.Split pocket drums are creating more wrinkles than open pocket drums because load is lifted completely out of the water.	-For a good quality without winkles of P/C garments use an open pocket drum

TROUBLE SHOOTING MECHANICAL SPLIT POCKET WASHER EXTRACTOR WE980-1300-2050-2910 SP&HSP

PROBLEM	REASON OR ORIGIN	WHAT TO DO
A.Noise during extraction because machine is hitting frame work.	1.Not all compartments loaded.	-All compartments should be loaded..
	2.Compartments unevenly loaded	-All compartments should be loaded ith the same quality and weight.
	3.Load is tangled (ball forming) due to too low washing speed mainly on 2 pocket drums. Check rotation frequency on F4, should be about 6 Hz.	-Drive motor defective, replace motor -Check programmation of washing speed, should be 90% for cotton sheets. -Frequency converter defective,replace frequency converter. -Output signal 0-10VDC (PC30/PS40) too low or print defective, replace programmer print. -Wrong parameter settings in frequency converter, load correct parameters in frequency converter. (See chapter VII) -V-belts are slipping, replace V-belts or tension V-belts.
	4.Tangling or ball forming of cotton sheets in large 2 pocket drums.	-Program drum stop in start of cycle. (No drum rotation with dry linen) -Program drain speed during each drain and be sure there is no drum stop before start drain speed. -Mix large sheets with small pieces or nets.
	5.Incorrect adjustment of tilt switch	-Check position and installation of tilt switch and actuating piece. (See chapter VIII)
	6.Out of balance switch not working or short circuited	-Check or replace out of balance switch -Check electrical connections inside tilt switch -Check or replace cable between programmer and out of balance switch.
	7.Transport brackets still in place.	-Remove transport brackets completely.
	8.Shock absorbers used, broken or unscrewed	-Check or replace shock absorbers, or install screws properly.
	9.Springs used, broken or wrongly agjusted. (only WE980SP)	-Check center height, replace or adjust springs.

TROUBLE SHOOTING MECHANICAL SPLIT POCKET WASHER EXTRACTOR WE980-1300-2050-2910 SP&HSP

	10.Air springs incorrectly blowed up	-Check pressure in each air cushion. -Check machine level, see starting up instructions Chapter IV.
B.Noise during rotation of drum (washing or extraction speed)	11.Bearings drive motor defective	-Replace bearings in drive motor.
	12.Drum bearings defective.	-Replace drum bearings.
	13.Bearing housings broken	-Replace bearing housing.
	14.Bolts bearing housings loose or broken.	-Tighten or replace bolts.
	15.Screaming noise of shaft seals (only WE1300-2050 SP& HSP)	-Shaft seals too dry, put some oil in lubrication line to shaft seals, check working and adjustment of air lubricator. -Check pressure for shaft seals 0.15 bar.
	16.Belts slipping;	-Check belt tension and adjust by placing washers under drive plate. -Check belt tension bottom shaft and move shaft to adjust tensionning.
	17.Drum is touching front or rear plate of outer drum	-Check for wearing or grinding marks on inner door locks. S.S. plate on inside has to be rewelded.
	18.Bearings or fan cooling motor defective	-Check bearings, fan on shaft and mechanical installation of cooling motor.
C.Water under machine.	20.Shaft seals leaking.	-Replace shaft seals.
	21.Seal drain housing or drain valves leaking.	-Replace seals.
	22.Leak on steam inlet.	-Replace seals, steam hoses or piping.
	23.Leak on outer shell or seal between outer shell and front plate.	-Contact IPSO service department.
	24.Leak on water inlet piping, steam inlet piping or leak product hopper.	-Check piping and hopper and repair or replace defective part.
	25.Leak on venting piping	-Repair or replace venting piping.
D.Leak on outer door (loading or unloading side)	30.Surface for door seal dirty or damaged.	-Clean or rectify stainless steel surface.
	31.Door seal damaged.	-Install complete new door seal.

TROUBLE SHOOTING MECHANICAL SPLIT POCKET WASHER EXTRACTOR WE980-1300-2050-2910 SP&HSP

	32.Pressure on seal too weak.	-Adjust door lock or catch piece. -Adjust door by installing extra plates under hinge blocks. -Pull locally on the S.S. springs under the door seal using a pair of pliers
	33.No air pressure on door lock cylinder.	-Check air valve Yd1s or Yd2s and air line to doorlock cylinder.
	34.Door lock cylinder seals are leaking.	-Replace seals or complete door lock cylinder.
E.Drain vlave is leaking.	40.Drain valves mechanical blocked by pencils, balpens, ...	-Disassemble drain valves and clean housing.
	41.Drain cylinder blocked.	-Disassemble drain valves, clean or replace drain valves.
	42.Drain seal damaged	-Turn or replace drain seal. -Check and clean S.S. surface for drain seal.
	43.No air supply on drain cylinder.	-Check air line 9. -Check air valve Yui and replace if needed. -Check voltage on air valve Yui, should be lower that 10VAC, if not check if resistor R47 on PS40 print, close to drain connections, is disconnected on one side.
F.Product hopper is overflowing.	50.Water flow is too high	-Because the size of the water inlet valves is suitable for low water pressure, the water flow on higher water pressures has to be reduced by closing a partly the hand valves or by reducing the diameter of the feeding line.
	51. Blocking in bottom of product hopper or in piping between hopper and outer shell.	-Check product hopper, flexible hose and piping installed on outer shell.
G.Air springs loose pressure to fast, needs to be blown up twice a day. (Not on WE980SP)	60.Manometer is leaking	-Put manometer connected on air line in a basket with water, if manometer is leaking install new manometer.
	61. Air inlet valve is leaking.	-Check inlet valve with a soap solution and replace if needed.

TROUBLE SHOOTING MECHANICAL SPLIT POCKET WASHER EXTRACTOR WE980-1300-2050-2910 SP&HSP

	62.Air leak air cushion. 63.Air leak on mounting rings. 64.Air leak in the steel air tank. 65;Small air leak very hard to find.	-Install new air cushion and new rings. -Thighten the srews for the rings. -Install new rings and air cushion. -Find the leak with a soap solution and repair by welding. -Blow up the air tand with a special tire fit product while the machine is extracting with some out of balance.
H. Noise in air spring during washing.	70.Air pressure too low, upper and lower centering pins are touching each other. 71.Stainless steel bushing for upper centering pin in rubber safety block broken, or rubber safety block inside air cushion damaged or cracked.	-Increase pressure in air springs, front and rear 25mm side plates should be min. 75mm above black base frame if machine is empty. -Replace rubber block and S.S. bushing with teflon guiding installed inside air cushion.
I.Incorrect positioning of innerdrum.	80.Proximity cell or indication plate on pulley incorrect adjusted. 81.Band brake does not function correctly. During positioning no air is applied to brake cylinder. Only after the drum has stopped XR is giving air by line 18 to brake cylinder. 82.Drum rotates in the wrong direction during positioning.	-Distance between cell and all indication plates on pulley should be 1 up to 2 mm. -Adjust cell support if all compartments have the same misaligment. -Adjust indication plates on pulley by loosing the 2 small screws. -If the right postion not can be reached, loose the clamping ring in pulley and rotate the pulley on shaft, tighten the clamping ring in the right way. -Brake lining used, replace brake band. -Defective solenoid valve Yr, Yr' or Yr'', replace valves. -Defective sliding valve XR, replace valve. -Brake cylinder defective, repair or replace brake cylinder. -Drum should rotate so that band brake is opened, if not change rotation direction but respect rotation during extraction.

TROUBLE SHOOTING MECHANICAL SPLIT POCKET WASHER EXTRACTOR WE980-1300-2050-2910 SP&HSP

	83.Incorrect positioning speed.	-During positioning CP1 parameter should indicate about 1Hz. If not reprogram frequency converter F4. See description of machine and frequency converter. The correct parameter program is indicated on the wiring diagram and on the existing F4.
J.Inner door lock hard to open.	90.Spring locking pin inner door lock blocked with lint. 91.Locking pins deformed. 92.Complete inner door deformed.	-Clean springs locking pins. -Clean guidings locking pins. -Install new plastic cap on pin or complete new locking pins. -Repair inner door or install complete new iner door with shaft.
K.Inner door hard to open.	100.Hinge shaft deformed 101.Clearance between hinge too small.	-Rectify or replace shaft inside hinge. -Remove inner door, open hinge and clean or enlarge opening.
L.Noise during braking.	110.Brake lining used or damaged. 111.Braking surface on pulley unclean or damaged. 112.Brake lining not suitable for this application.	-Replace brake band. -Clean or rectify with sand paper brake surface op pulley and brake band. -Brake lining can produce screaming noise under some circumstances (temperature and moisture), clean braking surfaces or install new brake band with correct brake lining.
M.No braking after extraction.	120.Band brake does not function correctly. 121.Brake remains open.	-Brake lining used, replace brake band. -Defective solenoid valves Yr, Yr' or Yr'', replace valves; -Defective sliding valve XR, replace valve. -Defective brake cylinder, replace brake cylinder. -Solenoid valve Yr is not switched off, check contacts between lines 30 and 14.

TROUBLE SHOOTING ELECTRIC SPLIT POCKET WASHER EXTRACTOR WE 980-1300-2050-2910 SP&HSP WITH PS40 AND FREQUENCY CONVERTER F4.

PROBLEM	REASON OR ORIGIN	WHAT TO DO
A. By pushing RESET button incorporated lamp does not light.	1.If contactor Kvm is energised, bulb defective	-Replace 220VAC bulb
	2.Emergency push button(s) pushed in.	-Pull emergency button(s) NS1 (&NS2)
	3.No voltage 220VAC on L6-L5 and white lamp H1 not lighted.	-Close main switch Q1 and check voltage after main switch, replace Q1 if needed. -Check fuses F3 -Check 220VAC on output transfo T1 -Check fuse F4; -Check connections up to line L6
	4.White lamp H1 lighted.	-Check emergency stop button(s) and replace if needed. -Check cables and connections up to line 21. -Check RESET button and replace if needed. -Check coil and contact of contactor Kvm and replace if needed.
	5.White lamp H1 lighted but overload relay Fvm witched of.	-Replace defective overload relay -Fan motor overloaded, check bearings and mechanical rotation by hand. -Fan motor defective, replace fan motor.
B. Impossible to open outer door by pushing door button.	10.No or insufficient air pressure.	-Check air pressure min. 5 bar -Air valve Yd1o(Yd2o) not working, replace N.C. valve. -No air pressure on valve Yd1o (Yd2o) air line 18, because sliding valve XR is not switched over by solenoid valve Yr'.
	11.Button Sd1o (Sd2o) defective	-Replace door button or check wiring..
	12.Relay Kdo not energized.	-Relay Kdo defective, replace relay. -Plug in base relay Kdo defective, install new octal relay base. -Check wiring between PS40 print and relay base. -No power suplly to relay Kdo, check output PS40, replace PS40 print if needed. See also point 13.
	13. No output on PS40 to Kdo.	-Temperature inside outershell too high, Check temperature sensor or steam valve for leakage. -Still water in outer shell, shut off compressed air to open drain valve, check

TROUBLE SHOOTING ELECTRIC SPLIT POCKET WASHER EXTRACTOR WE 980-1300-2050-2910 SP&HSP WITH PS40 AND FREQUENCY CONVERTER F4.

		connections of level tube. Pull off level hose on level switch on print and calibrate level (See test 4 in test mode PS40 description) or replace PS40 print (defective level sensor).
	14.Relay Kz and Ko not energised	-LED A1/A2 not lighted, no power supply, check 220VAC on A1/A2 -Power supply 220VAC on A1/A2, relay Ko defectice, replace relay. -LED ZERO SPEED not lighted, check fuses F6 and connections. -Relay Kz defective, replace relay.
	15.Still air pressure on the closing side of door lock	-Valve Yd1s (Yd2s) do not receive 220VAC, check cable and connections. -Coil of valve Yd1s (Yd2s) defective replace coil. -Valve Yd1s (Yd2s) defective, replace complete N.O. valve. -Still air in line 12 (22) because air line 10 has still air pressure, check brake cylinder or solenoid valve Yr for leakage and repair. -Still 220VAC on solenoid valve Yr, check circuit between lines 30 and 14.
	16.Seals in door lock cylinder leaking.	-Check seals, replace seals or complete door lock cylinder.
	17.Mechanical pressure on catch piece too high.	-Check mechanical installation, clean and apply some grease on the contact surfaces of catch piece and piston rod.
	18.Door cannot be unlocked by push button.	-Switch off pneumatic and electric power and open piston rod using hamer and large screw driver..
	19.On hygienic machines, loading or unloading door not closed.	-Check working and wiring of relays Kd1 Kd2. -Check closing of door swicht Sd1 and Sd2. Adjust catch piece of door switch or replace door switch. -Check cable and connections of door switches

TROUBLE SHOOTING ELECTRIC SPLIT POCKET WASHER EXTRACTOR WE 980-1300-2050-2910 SP&HSP WITH PS40 AND FREQUENCY CONVERTER F4.

C.Inner drum do not start positionning by pushing START button.	20.No power supply to frequency converter. No indication on display frequency converter	-Check 400VAC after main switch Q1 -Check 400VAC after fuses F1 -Check 400VAC after contactor Km. -Check 400VAC after L-R-C filter, if defective make a short circuit over filter. Machine can operate without filter but install asap a new filter.
	21.Power supply 400VAC on L1-L2-L3 terminals frequency converter and nOP on display F4	-nOP means frequency converter is OK but control release not bridged. Failure in external wiring. See points 24 and 25
	22.Power supply on frequency converter but no indication on display.	-Frequency converter defective, install new preprogrammed F4.
	23.Error message on display F4.	-See "Error Diagnosis" in F4 description.
	24.Electric failure in circuit of relays Kp1 and Kp2	-Check wiring, connections and Sst button, replace button if needed. -Check relays and base Kp1 and Kp2, replace if needed. -Check 220VAC voltage between lines L5 and 108, then 109. -Check proximity cell on pulley and replace if needed
	25.Electric failure in circuit to frequency converter.	-Contact Kp2 (4-13) or Kp21 or Kp22 should be closed -Contact K2 (13-12) should be closed to bridge brake contact Sr which remains open during positioning. -Contact Kd1 (Kd3) line 195-13 should be closed. -Check terminal connections 19, 14 and 6 on frequency converter.
	26.Electronic failure in frequency converter.	-If all above functions are correct, select parameter CP1 on frequency converter and by pushing Sst button display should show about 2 Hz, if not parameter setting is incorrect or frequency converter defective. Reprogram the existing frequency converter or install new programmed frequency converter.
	27.Electric failure between frequency converter and motor.	-Check cable and connections on terminals U, V, W and also motor terminals.

TROUBLE SHOOTING ELECTRIC SPLIT POCKET WASHER EXTRACTOR WE 980-1300-2050-2910 SP&HSP WITH PS40 AND FREQUENCY CONVERTER F4.

	28.Brake power of band brake too high.	-By pushing START button, Kp2 (Kp21 or Kp22) should energise, valve Yr' should be switched off and Yr" energised so that valve XR so that extra brake force is released. -Brake band stick to brake pulley, clean brake band and pulley with sand paper. -Rotation direction ofdrum should open band brake (Opposite of extraction direction).
D.Washing cycle does not start after selecting cycle and pushing I on PS40 with Error indication on PS40 display.	30. "02" on display.	-No program under selected number, select correct number. -Programs are cancelled by defective ZERO POWER RAM on PS40 print, install new one.
	31. "door open" on display.	-Door switch(es) not closed, check door switches, connections, cables and relay Kd1 (Kd2 and Kd3)). -Adjust catch piece on door or replace door switch. -Switch S2 not in the washing position. -On hygienic machines, push button "Washing" not pushed, relay K2 not energised.
	32. "A6" on display.	-Still water detected in outer shell, shut off compressed air to open drain valve, check connections of level tube or replace PS40 print (defective level sensor).
	33. "A9" on display.	-Temperature inside outer shell too high, checktemperature or replace temperatore sensor. -Check steam inlet valve and replace if needed.
	34. "FA" on display.	-Check position and installation of out of balance switch and actuating piece. (See chapter VIII). -Check connection of out of balance switch.
E.Washing cycle does not start after selecting cycle and pushing I on PS40 without Error indication on display.	40.No data transfer between display and PS40 print.	-Check connection between display and print and plug on PS40 print. -Push button panel with display defective, replace panel. -PS40 print defective, replace PS40 print.

TROUBLE SHOOTING ELECTRIC SPLIT POCKET WASHER EXTRACTOR WE 980-1300-2050-2910 SP&HSP WITH PS40 AND FREQUENCY CONVERTER F4.

F.Washing cycle is started but drum does not rotate.	50.No drum rotation time or rotation speed programmed.	-Check and if needed reprogram PS40.
	51.Display on F4 is giving nOP, brake contact or door contact(s) is open.	-Air pressure too low min 5 bar to open band brake completely. -Check and adjust brake contact. -Check wiring brake contact Sr. -No air supply in line 10 to open band brake, check air valve Yr and wiring between lines 30 and 14 -Check contact(s) Kd1 (Kd2) to terminal 14 of F4 and repair.
	52.Display on F4 is giving LS, no drive control input.	-Check connections to terminals 10 and 11 on F4, if no output on PS40, PS40 print defective and has to be replaced. -Check connections to terminals 8 and 9 on F4, if no output on PS40 (about 0.5 VDC), PS40 print defective.
	53.Display on F4 is giving rotating frequency but no drum rottation.	-Drive motor defective, replace motor. -V-belts are slipping, replace V-belts or tension V-belts. -Check cable connections between F4 and drive motor.
	54.No display indication on F4.	-See points 20 and 22.
	55. Error message on F4 display.	-See "Error Diagnosis" in F4 discription. -If "E.nOH" appears on F4 display, check the connections between OH terminals and small connector inside motor terminal box. Check also working of cooling fan on drive motor and clean ventilation openings. If PTC sensors in motor are defective machine can operate for a limited period with a short circuit over terminals OH. Also defective motor bearings can increase motor temperature, install new bearings or replace motor.
	56. Load on F4 can be checked by selecting parameter CP3 on F4 display.	-During washing and positioning the load can go up to max.130% . -During drain speed and extracting the load can go up to max.100%. -Machine overloaded, check weight of load or articles are absorbing more than 250% of water, unload partly the drum. -If the load becomes higher than above values check motor, motor bearings and

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		drum bearings. Also the F4 can be partly defective and need to be replaced by a preprogrammed new F4..

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G.No drain	60.Drain not programmed.	-Check programming d1 (d2) and also preprogramming mode, reprogram if needed.
	61.Drain programmed	-Drain valve mechanical blocked. -Solenoid valve Yui defective, replace coil or complete valve. -No signal to solenoid valve Yui, check connections valve in line 9 and output on PS40 print.
H.No drain speed	70.Drain speed not programmed.	-Check programming diST during drain, reprogram if needed.
	71.Relay Kdis not energised.	-Check connections (lines 221 and 222), base and relay Kdis, replace if needed. -no output on terminal DIST of PS40 print, defective PS40, replace print.
	72.Relay Kdis energised	-Check contact and connections contact Kdis(13-3) to terminal 4 on F4, if needed replace relay Kdis. -Input 14 on F4 defective, install new preprogrammed F4. -Incorrect parameters for distribution speed, reprogram F4 with correct parameters.
I.No extraction speed.	80.Extraction speed not programmed	-Check programming "SP in", time and speed in %, reprogram if needed. -Check programming HF and FC in preprogramming mode, correct if needed.
	81.Relay Ksp not energised.	-Check connections (lines 220 and 222), base and relay Ksp, replace if needed. -No output on termibal SL of PS40 print, still water detected by level switch, pull off rubber hose on level switch, if extraction is started check level hose tube and clean connection in bottom outer shell. If extraction is not started defective PS40 print and needs to be replaced. -See point 34 out of balance switch.
	82.Relay Ksp energised	-Check contact and connections contact Ksp (13-9) to terminal 5 on F4, if neede replace relay Ksp -Input 5 on F4 defactive, install new preprogrammed F4. -Incorrect parameters for extraction speeds, reprogram F4 with correct parameters.

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		-No speed signal to terminals 9 and 8 on F4, check connection and output voltage for full extraction speed should be 10VDC. If not replace PS40 print. -Defective frequency converter F4, install new preprogrammed F4. -Defective drive motor or motor not adapted to the high extraction frequency. (180 up to 215 Hz)
	83.Extraction is switched off by out of balance switch.	-See part A in "TROUBLE SHOOTING WASHIING".
	84.Extraction is by-passed by PS40.	-Check "iS.tilt.XX" and ES.tilt.XX" in the pregramming mode, we recommend to allow 5 restarts, reprogram if needed.
J.Program jumps to the end without performing the complete cycle.	90.Door contact to input DO and LOCK was opened for more than 30 seconds.	-Check connections and contacts in lines 599, 61 and 69. -Door switch was opene during washing due to faulty connection, check connection points and wiring. -Door switch was opened during heating due to deformation of front plate, add some extra plates under catch piece on door.