OPERATING & MAINTENANCE MANUAL
EX 7 HI-TEK – EX 10 HI-TEK

471 1562-85/94.40

WARNING: ALL OPERATING AND MAINTENANCE PROCEDURES SHOWN ON THE NEXT PAGE OF THIS MANUAL MUST BE FOLLOWED DAILY FOR PROPER OPERATION OF YOUR WASCOMAT MACHINE.

PLEASE ENTER THE FOLLOWING INFORMATION AS IT APPEARS ON THE MACHINE(S) DATA PLATE(S).

MACHINE TYPE OR MODEL	
MACHINE SERIAL NUMBER(S)	
ELECTRICAL CHARACTERISTICS: _____ VOLTS, _____ PHASE, _____ HZ.	

MAKE CERTAIN TO KEEP THIS MANUAL IN A SECURE PLACE FOR FUTURE REFERENCE.

NOTICE TO: OWNERS, OPERATORS AND DEALERS OF WASCOMAT MACHINES

IMPROPER INSTALLATION AND INADEQUATE MAINTENANCE, POOR HOUSEKEEPING AND WILLFUL NEGLECT OR BYPASSING OF SAFETY DEVICES MAY RESULT IN SERIOUS ACCIDENTS OR INJURY. TO ASSURE THE SAFETY OF CUSTOMERS AND/OR OPERATORS OF YOUR MACHINE, THE FOLLOWING MAINTENANCE CHECKS MUST BE PERFORMED ON A DAILY BASIS.

1. Prior to operation of the machine, check to make certain that all operating instructions and warning signs are affixed to the machine and legible. (See the following page of this manual for description and location of the signs.) Missing or illegible ones must be replaced immediately. Be sure you have spare signs and labels available at all times. These can be obtained from your dealer or Wascomat.

2. Check the door safety interlock, as follows:

   (a) OPEN THE DOOR of the machine and attempt to start in the normal manner:

   For coin-operated models, insert the proper coins to start the machine.

   For manually operated models, place the ON-OFF switch in the ON position and press the Start switch.

   For FL and EX models, insert a program card, turn the starter knob to the Start position and place the ON-OFF switch in the ON position.

   For HI-TEK microprocessor models, turn the key switch to the RUN position, choose a program and press the START button.

   For SELECTA 28 models, select a wash program and press the Start button.

   THE MACHINE(S) SHOULD NOT START !

   (b) CLOSE THE DOOR to start machine operation and, while it is operating, attempt to open the door without exerting extreme force on the door handle. The door should remain locked!

   If the machine can start with the door open, or can continue to operate with the door unlocked, the door interlock is no longer operating properly. The machine must be placed out of order and the interlock immediately repaired or replaced. (See the door interlock section of the manual.)

3. DO NOT UNDER ANY CIRCUMSTANCES ATTEMPT TO BYPASS OR REWIRE ANY OF THE MACHINE SAFETY DEVICES AS THIS CAN RESULT IN SERIOUS ACCIDENTS.

4. **Be sure to keep the machine(s) in proper working order**: Follow **all** maintenance and safety procedures. Further information regarding machine safety, service and parts can be obtained from your dealer or from Wascomat through its Teletech Service Telephone - 516/ 371-0700.

All requests for assistance must include the model, serial number and electrical characteristics as they appear on the machine identification plate. Insert this information in the space provided on the previous page of this manual.

5. **WARNING**: DO NOT OPERATE MACHINE(S) WITH SAFETY DEVICES BYPASSED, REWIRED OR INOPERATIVE! DO NOT OPEN MACHINE DOOR UNTIL DRUM HAS STOPPED ROTATING!

Contents

The manufacturer reservs the right to make changes to design and material specifications.

Safety instructions

- **The machine is designed for water washing only.**
- **The machine must not be used by children.**
- **All installation operations are to be carried out by qualified personnel. Licensed personnel are necessary for all electric power wiring.**
- **The interlock of the door must be checked daily for proper operation and must not be bypased.**
- **All seepage in the system, due to faulty gaskets etc., must be repaired immediately.**
- **All service personnel must be fully familiar with the operating manual before attempting any repair or maintenance of the machine.**
- **The machine must not be sprayed with water, otherwise short circuiting may occur.**
- **Fabrics softener with volatile or inflammable fluids are not to be used in the machine.**

Introduction

Fig. 1

The Ex 7 HI TEK and Ex 10 HI TEK models washer/extractor with high spin speeds, have been developed to cover the requirements of apartment house laundry, laundromats, insitutions, hospitals etc., where high quality automatic washing and quick formula variation are required.

The machines are free-standing, i.e. the drum is free to move relative to the frame of the machine, being suspended from it by springs. This results in a considerable reduction in vibration transferred to the frame of the machine, which in turn simplifies installation: no special foundation is required.

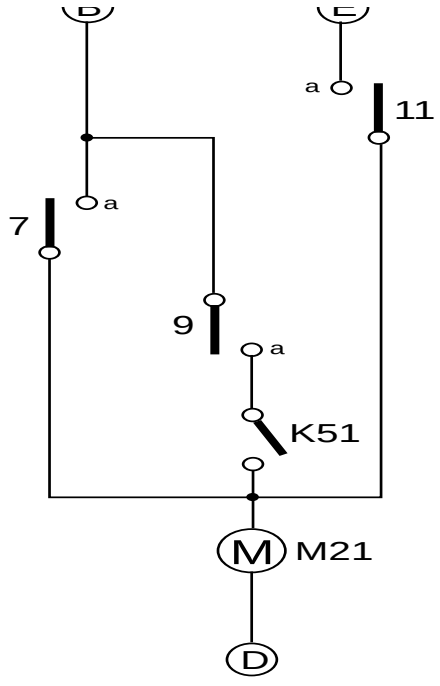
The machines offer five pre-set wash programs Hot, Warm, Cold, Permanent Press and Delicate. These programs are designed to suit a variety of fabrics and offer different water temperature. The machine is designed for connection to hot and cold water supplies.

All parts of the machine which come into contact with the items being washed are made of heavy gauge surgical stainless steel, ensuring long life and lasting beauty, as well as full protection for no-iron fabrics. The wash/extract motor, electrical components and water valves are made accessible for servicing by simply removing the top panel.

This manual contains a technical description of the Wascomat Ex 7 HI TEK and Ex 10 HI TEK model machines with instructions for their installation, operation and maintenance. Together with the wiring diagram which accompanies each individual machine it should be kept in a safe place for easy reference.

When ordering spare parts always give the machine serial number, model, voltage and other electrical characteristics appearing on the nameplate at the rear of the machine.

1



1673

Technical data Ex 7 HI TEK

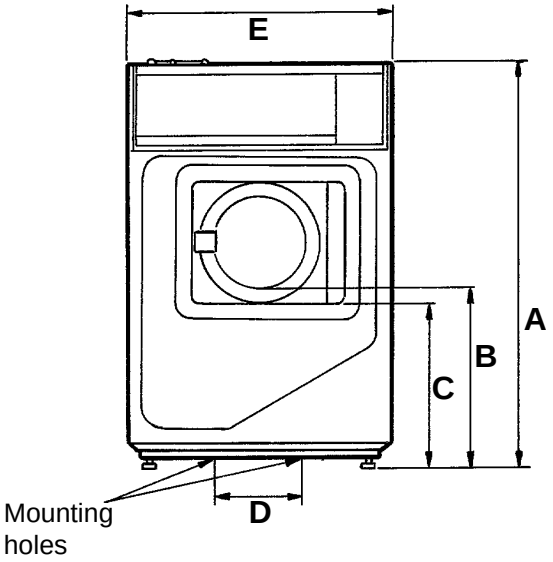
Dry load capacity	up to			15	lbs
Overall dimensions	Width	720	mm	28 11/32	in
	Depth	660	mm	26	in
	Height	1100	mm	43 5/16	in
	Net weight	164	kg	361	lbs
Maximum floor load		1.64 ± 0.7	kN	390 ± 170	lbs force
Crated dimensions	Volume	0.66	m^3	23.3	cu.ft
	Weight	176	kg	387	lbs
Inner drum dimensions	Diameter	520	mm	20 15/32	in
	Depth	310	mm	12 3/16	in
	Volume	60	litre	2.1	cu.ft
Speed	Wash	52	r.p.m.		
	Distribution	80	r.p.m.		
	Extraction	1020	r.p.m.		
G-factor	During wash	0.8			
	During extraction	300			
Motor speed	During wash	1140	r.p.m.		
	During distribution	1740	r.p.m.		
	During extraction	3430	r.p.m.		
Voltage requirements	120 V 1 AC 60 Hz				
Rated output power	Motor, wash	140	W	0.19	HP
	Motor, distribution	100	W	0.13	HP
	Motor extraction	350	W	0.5	HP
Overcurrent protection		20	A		
Water connections	Max. pressure	10	kp/cm^2	142	psi
	Rec. pressure	2-6	kp/cm^2	25-85	psi
	Hose connection, water	DN 20		3/4	in
Drain connection	Hose	50	mm	2	in

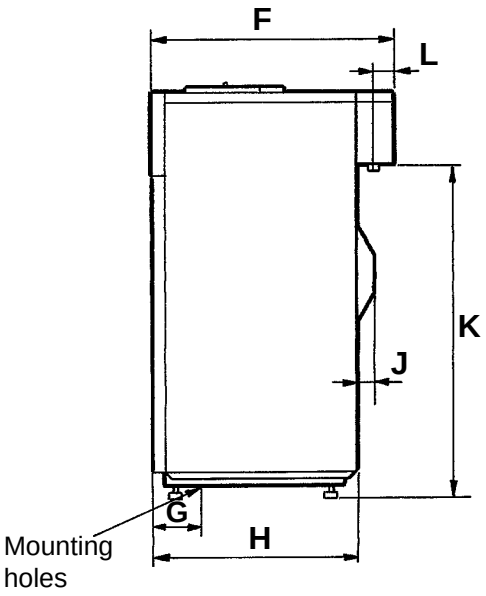
Technical data Ex 10 HI TEK

Dry load capacity	up to			22	lbs
Overall dimensions	Width	720	mm	28 11/32	in
	Depth	820	mm	32 9/32	in
	Height	1100	mm	43 5/16	in
	Net weight	225	kg	495	lbs
Maximum floor load		2.3 ± 0.9	kN	550 ± 220	lbs force
Crated dimensions	Volume	0.77	m^3	27.2	cu.ft
	Weight	240	kg	528	lbs
Inner drum dimensions	Diameter	520	mm	20 15/32	in
	Depth	470	mm	18 1/2	in
	Volume	100	litre	3.5	cu.ft
Speed	Wash	52	r.p.m.		
	Distribution	80	r.p.m.		
	Extraction	1020	r.p.m.		
G-factor	During wash	0.8			
	During extraction	300			
Motor speed	During wash	1130	r.p.m.		
	During distribution	1730	r.p.m.		
	During extraction	3400	r.p.m.		
Voltage requirements		120 V or 208-240	V 1 AC 60 Hz		
Rated output power	Motor, wash	200	W	0.27	HP
	Motor, distribution	180	W	0.24	HP
	Motor extraction	550	W	0.74	HP
Overcurrent protection		20	A at 120 V		
		15	A at 208-240 V		
Water connections	Max. pressure	10	kp/cm^2	142	psi
	Rec. pressure	2-6	kp/cm^2	25-85	psi
	Hose connection, water	DN 20		3/4	in
Drain conection	Hose	50	mm	2	in

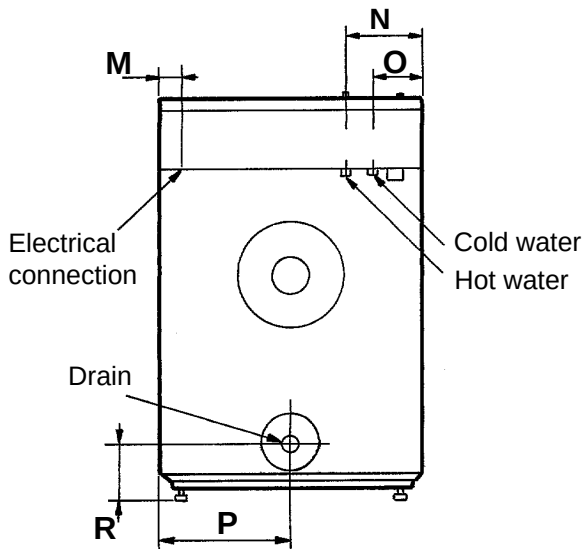
Technical data

Outline and dimension

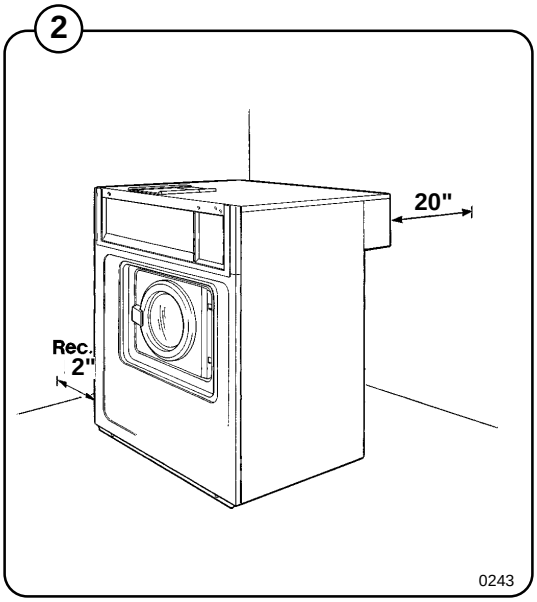




	Ex 7 HI TEK		Ex 10 HI TEK	
	mm	inches	mm	inches
A	1100	43 5/16	1100	43 5/16
B	485	19 3/32	485	19 3/32
C	440	17 5/16	440	17 5/16
D	260	10 1/4	260	10 1/4
E	720	28 11/32	720	28 11/32
F	660	26	820	32 9/32
G	65	2 9/16	65	2 9/16
H	555	21 27/32	715	28 5/32
J	50	1 31/32	50	1 31/32
K	905	35 5/8	905	35 5/8
L	40	1 9/16	40	1 9/16
M	60	2 3/8	60	2 3/8
N	210	8 9/32	210	8 9/32
O	130	5 1/8	130	5 1/8
P	360	14 5/32	360	14 5/32
R	150	5 29/32	150	5 29/32



Installation



The machines are free-standing, i.e. the drum can move relative to the frame of the machine. This results in a considerable reduction in vibration transferred to the frame which in turn simplifies installation: no special foundation is required.

The machine is delivered complete with expansion bolts, template etc. packed inside the drum. Move the machine on its pallet to where it is to be installed before removing the pallet retaining bolts.

Location

Fig. (2) Install the machine close to a floor drain or open drain.

In order to make installation and servicing the machine easier the following clearances are recommended:

- At least 20" between the machine and the wall behind
- and a minimum of 2" on both sides of the machine whether installed next to the wall or other machines.

Where space is limited it is possible to reduce this distance to a minimum of 1" at the rear and sides, since most service operations are carried out from the front or top of the machine.

Floor

The floor must be able to withstand the following loads:

	EX7	EX10
static	390 lbs	550 lbs
dynamic	170 lbs	220 lbs
frequency of dynamic force	17 kHz	17kHz

Mechanical installation

The machine is delivered with the drum locked in place by four transport bolts fitted between the frame and the drum. In order to remove these and install the machine, proceed as follows:

- Unpack the machine.

Fig. 3
- Slacken off the screws in the lower edge of the front cover plate and remove the plate by pulling downward and outward to unhook it from the chassis.

Fig. 4
- Unscrew the retaining screws on the rear plate and remove the plate. Remove the drainage connection by unscrewing the two screws. Lift the drainage connection upwards until comes loose from the rear plate.

Fig. 5
- Mark and drill two holes (diameter =5/16") about 4" deep in the positions shown.
- Remove the machine from the transport pallet. Fit the adjustable feet provided.
- Place the machine above the bolt holes you just drilled. Always lift the machine by the chassis, never by the door or door handle.

Fig. 6
- Remove the four transport bolts securing the drum to the chassis.
- Check that the machine is level and steady. Adjust the level by using the four adjustable feet (check first that they are screwed in as far as possible). Lock the feet using the lock nuts when the machine is satisfactorily positioned.

NOTE!

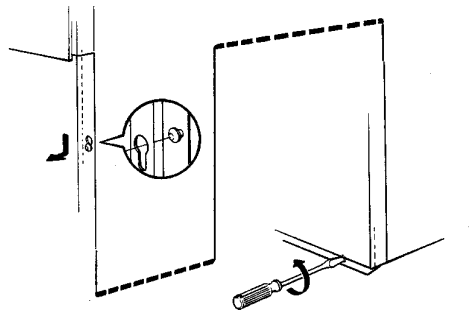
It is of utmost importance that the machine be level, from side-to-side as well as front- to-rear. If the machine is not properly leveled, it may result in a false out-of-balance cutout.

- Insert the expansion bolts supplied in the holes drilled in the floor.

Fit the washers and nuts, and tighten well.

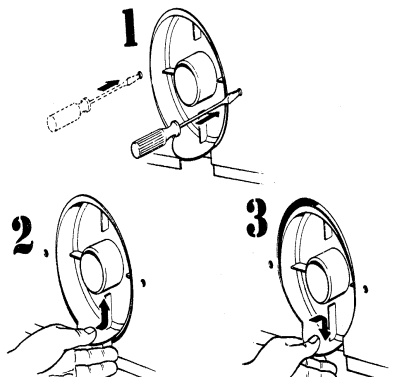
After the machine has been in use for a while check and retighten the nuts if necessary.

3



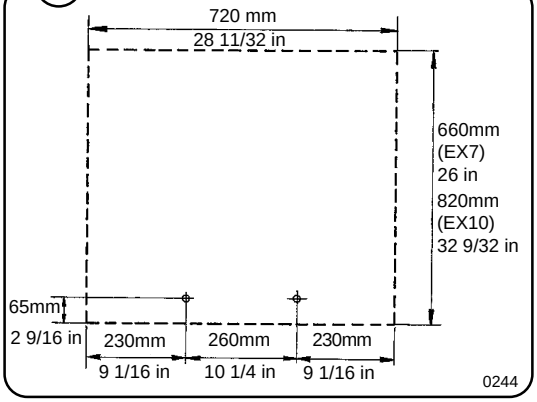
0671

4



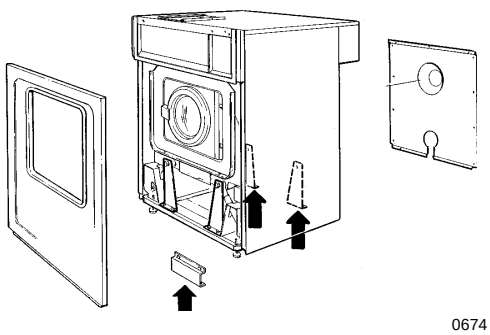
0672

5



0244

6



0674

Water supply

NOTE

All plumbing must conform to national and local plumbing codes.

Fig. 7 The water supply to the machine should be fitted with manual shut-off valves to facilitate installation and servicing.

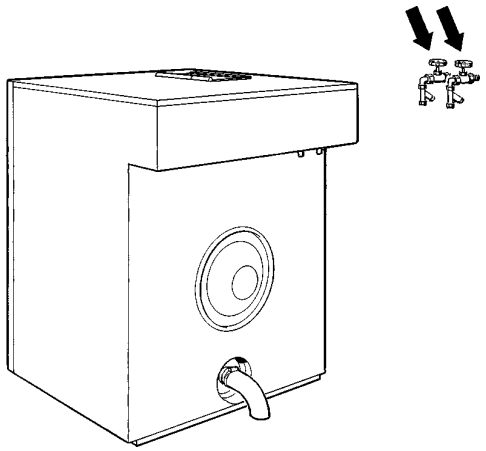
Fig. 8 Water inlets are labelled for hot and cold water connections. Hoses should be flushed through before being connected to the machine.

Fig. 9 Connection hoses should be 3/4" reinforced rubber hosing not to exeed 6 ft in length. Make sure the hoses have no sharp bends or angles.

Water pressure should be:

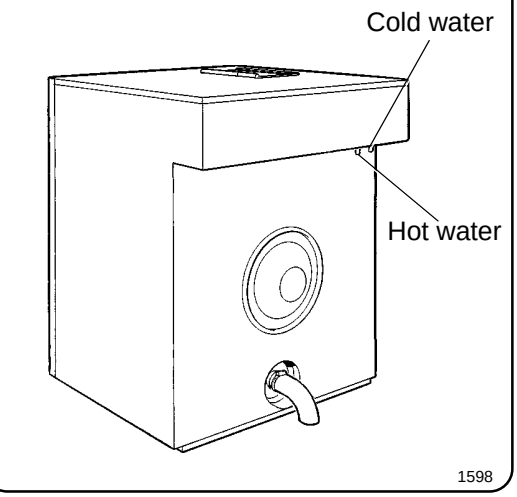
maximum:	142 psi (10 kp/cm^2)
recommended:	25-85 psi (2-6 kp/cm^2)

7



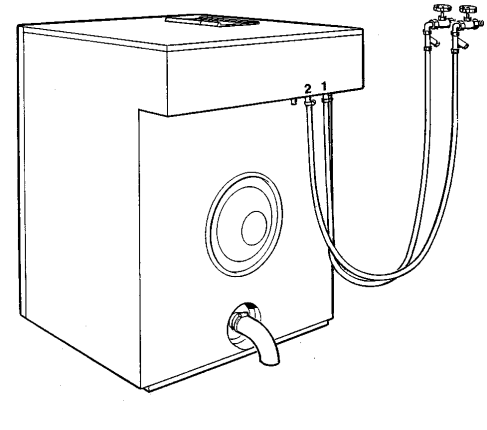
1597

8



1598

9



0248

Drain connection

Fig. (10) Connect a 50 mm (2") flexible hose to the machine's drain outlet. Avoid sharp bends which may prevent proper draining.

The drainage pipe should be located so that the distance between the outlet and the drain is at least 25 mm (1"). Refer to local regulations on water supply and drainage.

Electrical installation

IMPORTANT!

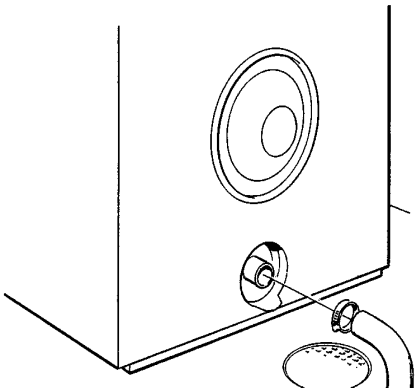
Electrical installation must be carried out by an authorized electrician, and must follow national and local regulations.

Make sure that the ground wires correctly connected.

Fig. (11) Each machine must be connected through its own circuit breaker.

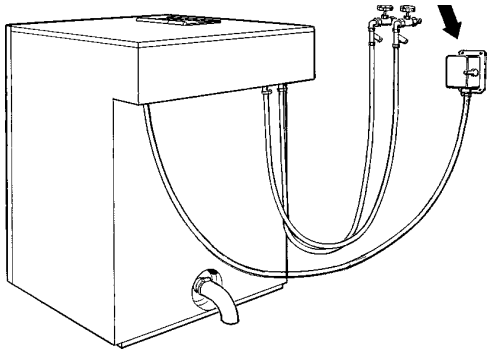
The cable must hang in a gentle arc.

10



0057

11



1599

Start-up and safety checklist

IMPORTANT:

Door safety interlock must be checked <u>daily</u> in accordance with the procedure described below.

WARNING:

Before servicing Wascomat equipment, disconnect electrical power.

Before initial start-up of the washer-extractor, the following safety checks must be performed:

- Make sure the machine is properly bolted to the floor.
- Make sure that all electrical and plumbing connections have been made in accordance with applicable local codes.
- Use only flexible water fill and drain hoses of the proper length to avoid sags and kinks.
- Make sure the machine is properly grounded electrically.

Before the machine is operated, the door safety interlock must be checked for proper operation as follows:

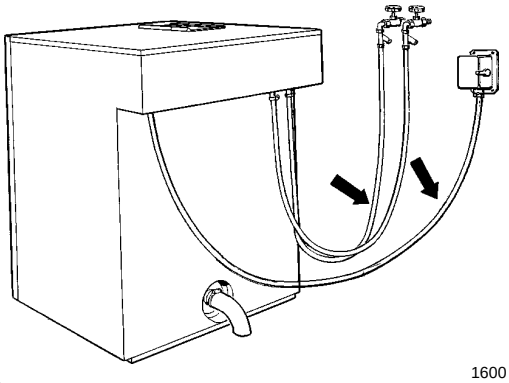
- When washer loading door is open, the machine must not start. Verify this by attempting to start washer with door open (see section ”Procedure”).
- When washer is in operation, the loading door is locked and cannot be opened. Verify this by attempting to open the loading door when the machine is operating. If necessary, consult this manual for proper operation of the door lock and door safety interlock or call a qualified serviceman.

Fig. (12)

Fig. (13)

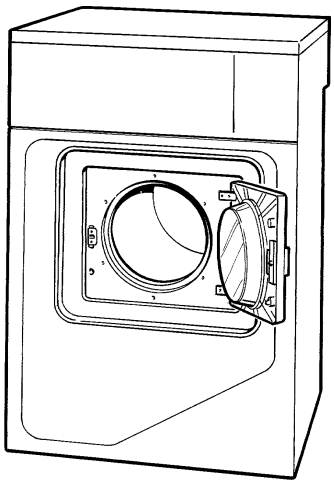
Fig. (14)

12



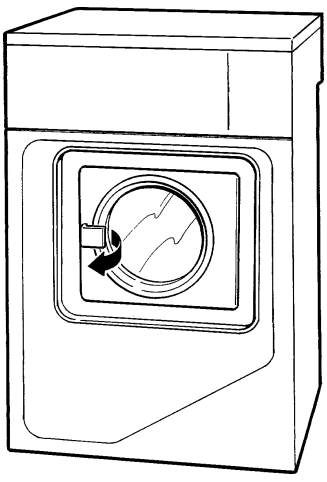
1600

13



1601

14



1602

Function control check-out list

In the machine cylinder, you will find the warranty registration card, a copy of the warranty policy, the bolt hole template and other pertinent material. The warranty card should be completed and sent to Wascomat. All other items should be placed in a safe place for future reference.

The machine should be cleaned when the installation is completed, and checked out as detailed below without loading the machine with fabrics:

1. Check the incoming power for proper voltage, phase and cycles.
2. Open manual shut-off valves to the machine.
3. Turn on electric power.
4. Check the door safety interlock as detailed on page 9 of this manual.
5. Select the HOT program and start the machine.

Fig. 15

6. Run through a complete cycle, checking for water temperature, wash, rinse and exctract operation, function of the soap supply box and drain valve.

Fig. 16

7. In the Wash cycle only hot water should enter. If cold water comes in, the hoses are improperly connected. Reverse hot and cold water hoses.

NOTE

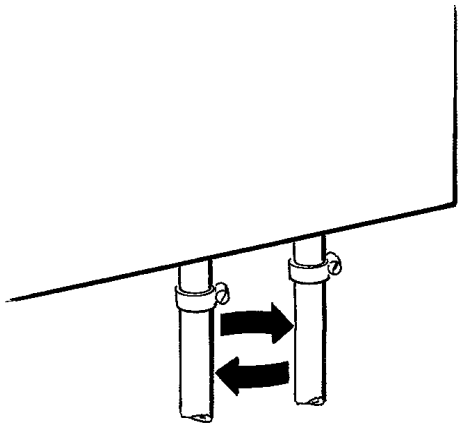
All machines are factory tested prior to shipment. Occasionally, some residual water may be found when the machine is installed.

15

	HOT		
	Time (min)	Temp	Water level
Wash 1	3	Warm	High
Detergent 1			
Drain	1		
Wash 2	6	Hot	Low
Detergent 2			
Drain	1		
Extract	0.5		
Rinse 1	1	Cold	High
Drain	1		
Extract	0.5		
Rinse 2	1	Cold	**High**
Drain	1		
Extract	0.5		
Rinse 3	2	Cold	Low
Detergent 3			
Drain	1		
Extract	4		
Shake-out	0.5		
Total time (water fill time not included)	24		

0996

16



1595

Safety rules

- **The machine is designed for water washing only.**
- **Machines must not be used by children.**
- **All installation operations are to be carried out by qualified personnel. Licensed personnel are necessary for all electric power wiring.**
- **The interlock of the door must be checked daily for proper operation and must not be bypassed.**
- **All seepage in the system, due to faulty gaskets etc., must be repaired immediately.**
- **All service personnel must be fully familiar with the operating manual before attempting any repair or maintenance of the machine.**
- **The machine must not be sprayed with water, otherwise short circuiting may occur.**
- **Fabrics softener with volatile or inflammable fluids are not to be used in the machine.**

General

The door, cycle indicator, coin meter or manual start switches, control light and program-selection knob are located at the front of the machine.

The motor and all control and indicating components, i.e. relays, level control, etc are assembled under the top cover, easily accessible from the top of the machine for simplified servicing.

Main units

Fig. 17

1 Program selector - rotary switch for choice of different wash programs.

2 Door - with automatic locking device which remains locked throughout the different wash processes.

3 Detergent supply box - three compartments for automatic injection of powdered detergents and fabric softener.

4 Inner cylinder - of stainless steel supported at the rear by two ballraces.

5 Outer drum - of stainless steel (18/8) supported by a four spring suspension system. There are also four shock-absorbers to control the movement of the drum.

6 Motor with an epicyclic gearbox - for reversing wash action, distribution and high speed spin action.

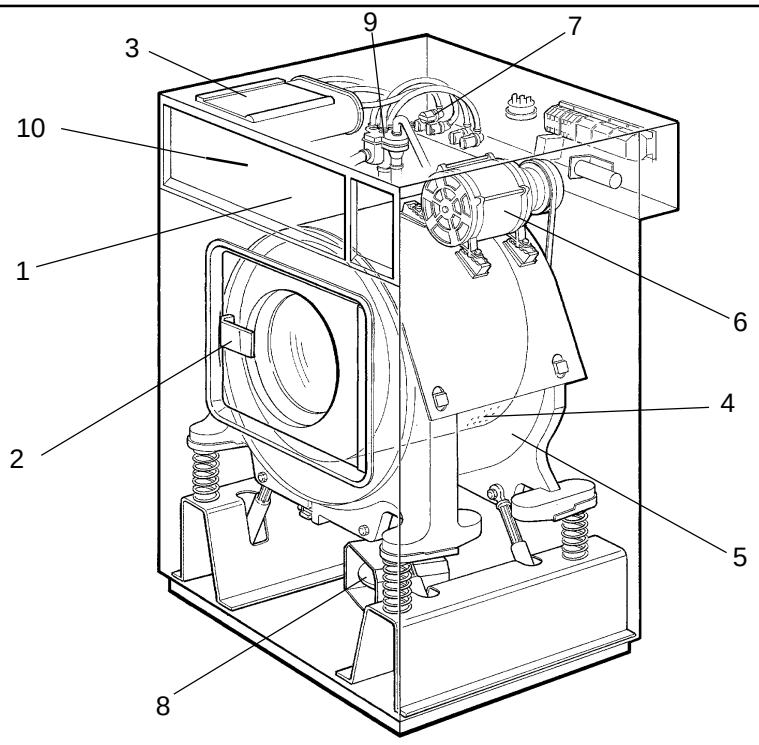
7 Hot and cold water valves - program and level controlled solenoid valves for filling with water, and for flushdown of automatic detergent dispenser.

8 Drain valve - timer controlled for draining the machine of water.

9 Siphon breaker - to prevent water in the machine from re-entering the water supply system.

10 Control unit - of plug in type.

17



0918

Machine construction

Panels

The machines are equipped with a top panel made of stainless steel. The front panel is available in different colors or in stainless steel. The colored panels are made of phosphatized steel plate. For servicing purposes, the panels can easily be removed.

Frame

Fig. 18 The frame consists of a bottom plate and two balance weights. The balance weights form a cradle for the outer drum and are suported by four springs. There are four shock absorbers to control the movements of the drum.

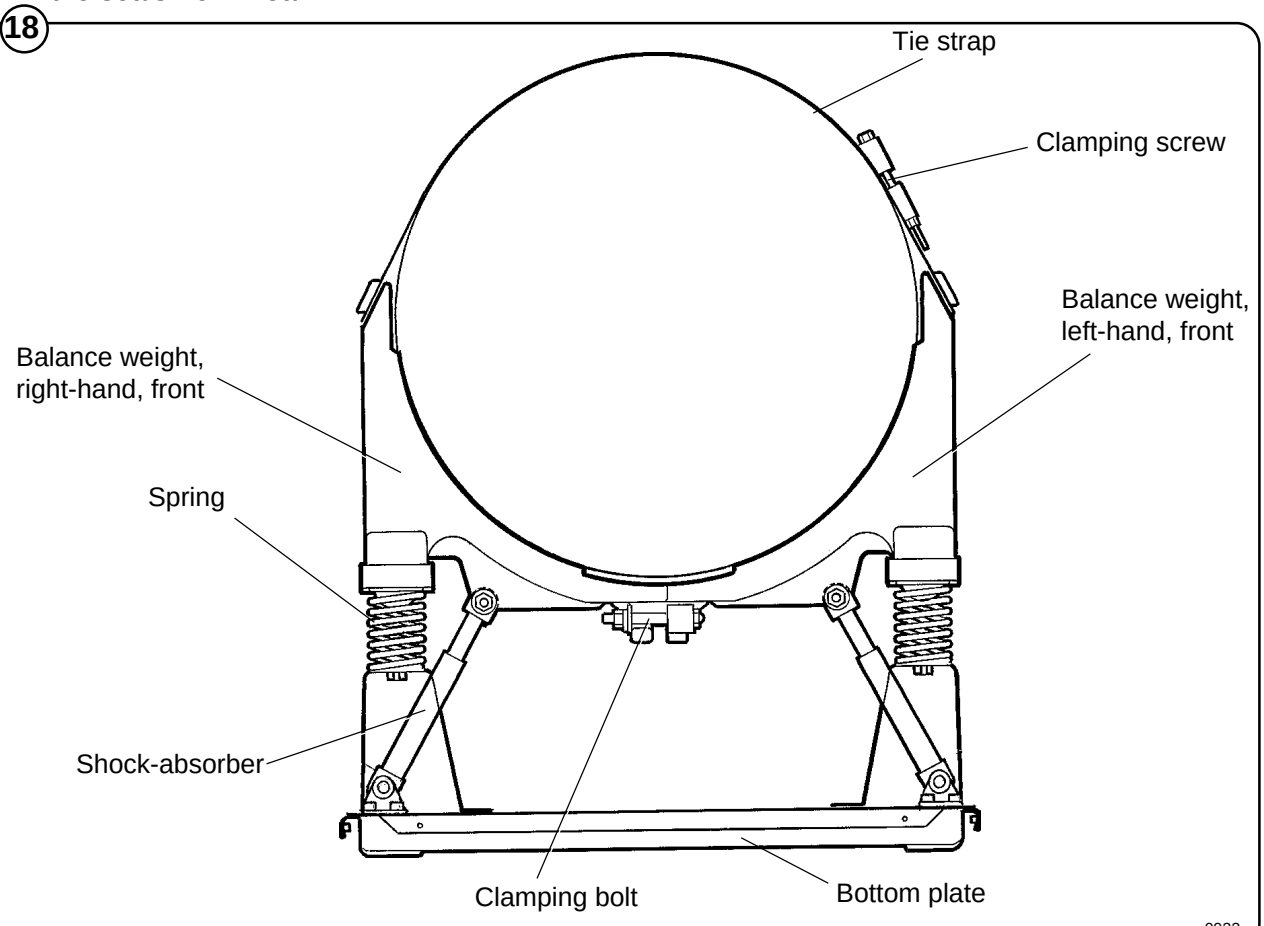
Inner cylinder

The inner cylinder is made of perforated surgical stainless steel. It is equipped with three lifting ribs and has highly-polished side sheets and back with maximum embossed perforated area to assure high flow of water and supplies through fabrics.

Scientifically correct ratio of cylinder diameter and depth assures maximum washing action.

The shaft is electrically welded to the reinforced back of the cylinder. A specially designed chrome-plated sleeve bushing protects the seals from wear.

18



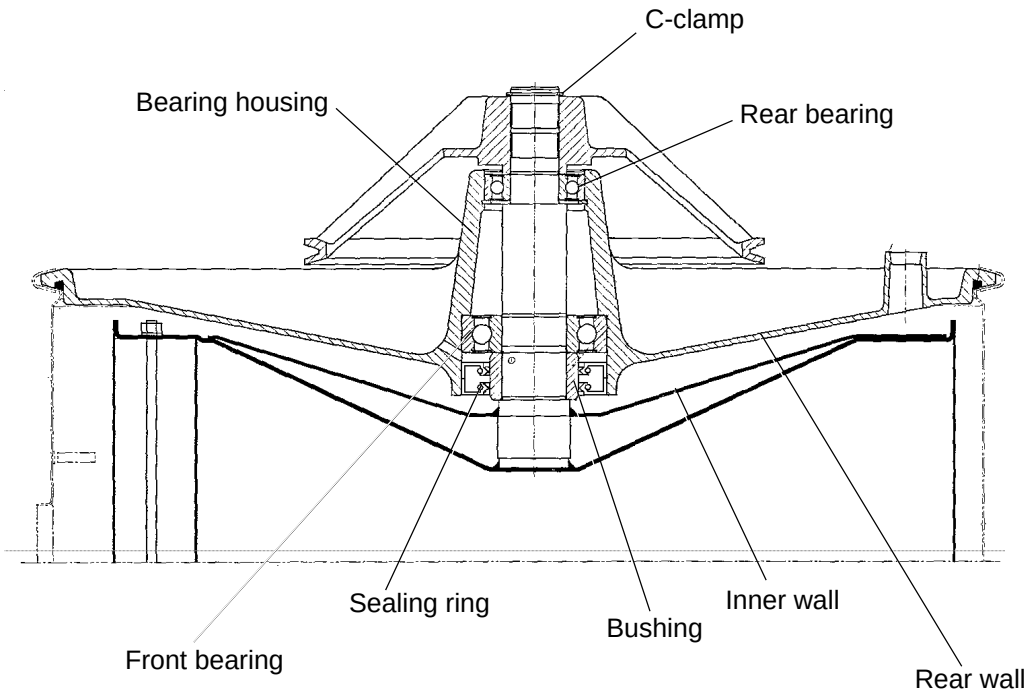
Back gable and bearing

The back gable and the bearing trunnion housing are constructed of a webbed heavy casting for extra rigidity. There are two neoprene seals to protect from filtration of water. The sleeve bearings are water protected. An intermediate safety outlet provides an escapement for any possible condensation.

Fig. 19 The seals are mounted on a chrome-plated, non-corresive, specially hardened sleeve bushing that is mounted on the drive shaft to prevent wear of the seals and shaft. The main bearing is fitted machine-tight into the bearing trunnion housing. A C-clamp is placed on the shaft to prevent the cylinder from moving in and out.

The extension of the bearing trunnion housing supports the rear bearing holding the shaft. The bearings are permanently lubricated and need no maintenance.

19



1601

Description

The door locking mechanism is a safety system that prevents injury by:

- Preventing the machine from starting before the door has been closed and the handle secured.
- Locking the door automatically when the machine starts.
- Preventing the door from being opened before the program has been concluded and the drum is stationary. This ensures that the drum is stationary when the door is opened and that there is no water in the machine.

Brief description of the locking action

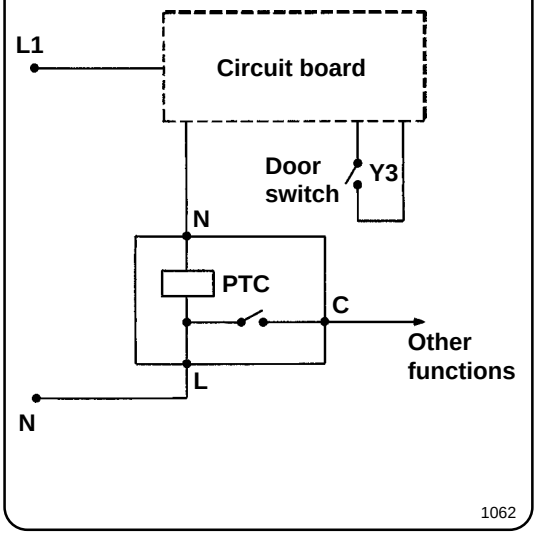
Fig. 20

1. Door is closed — Microswitch Y3 is operated by the door and closes.
2. Machine starts — The timer energises the PTC resistor in the locking mechanism. This causes the bimetal strip in themechanism to heat up and toggle over to lock the catch. It also operates an electrical contact, connecting the N line to the connectors and valves in the machine.
3. Program runs
4. Program is finished — The supply to the PTC resistor is disconnected, allowing the bimetal to cool. When it has cooled, it toggles back and releases the catch, while the electrical contact interrupts the common (N) connection to the connectors and valves.

NOTE

Do <u>not</u> repair a faulty door lock. Allways replace the old unit with a new one, to assure proper operation of the door safety interlock.

20

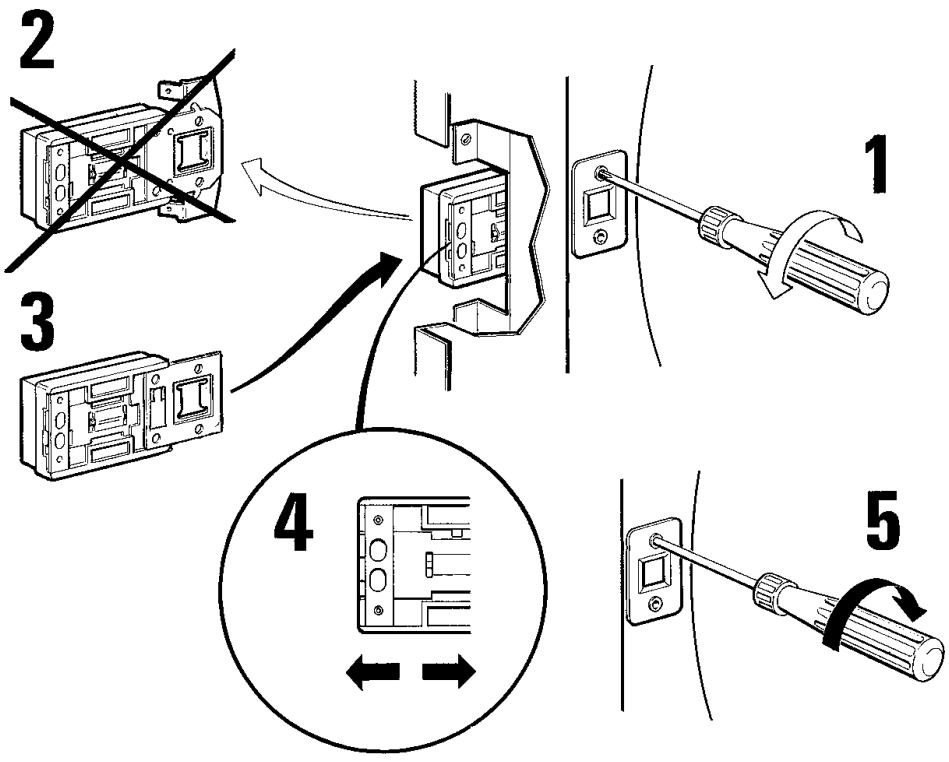


Replacement of door lock

Fig. (21)

1. Remove the retaining screws securing the front panel and slide the panel downwards until it disengages. Lift it away.
2. Open the door of the machine.
3. Remove the door lock by undoing the two retaining screws and remove the locking plate (**1**).
4. Pull the lock outwards at the side of the front trim (**2**).
5. Transfer the electrical connections from the old locking mechanism to the new locking mechanism, one at a time.
6. Position the new locking mechanism behind the front trim (**3**).Position the striker plate and secure it using the two retaining screws (**4**).
7. Close the door of the machine and check that the door lock is working.
8. Engage the front panel, and slide it upwards until it can be retained by the two screws in the bottom. Fit the two screws (**5**).
9. Check that the door switch is operating properly by starting the machine and checking that the door cannot be opened while the program is running.

21



0925

Control unit

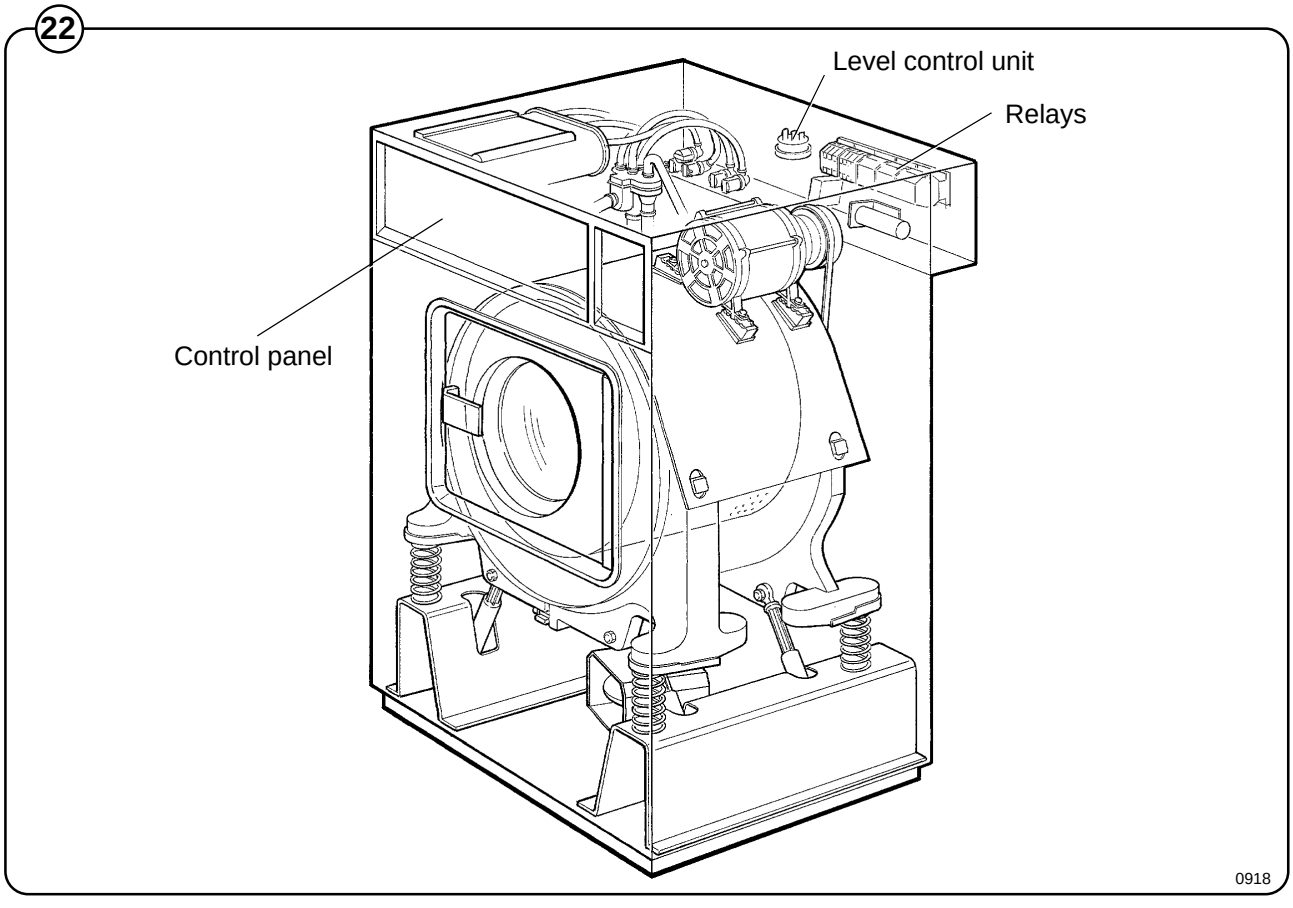
Fig. 22

The timer and program selector are mounted just behind the control panel.

Relays and level controls are located at the top of the machine, easily accessible for service.

Electrical connections to the machine are made by quick-disconnect plugs.

The circuit diagram is sent with each machine.



Relays

Fig. 23 The Wascomat Ex7 HI TEK and Ex10 HI TEK models employ four relays. The relays control the motor action:

- wash speed forward
- wash speed reverse
- distribution speed
- extraction speed

Construction

Fig. 24 The body of the relay holding the stationary contacts is made of current-resistant plastic. A solenoid and a contact bank hold the moving contacts. The contacts are spring-loaded to assure the correct contact pressure.

The relay is constructed for continous operation, whether mounted horizontally or vertically.

Screw-type terminals provide perfect connections even when one or two wires have different diameters.

Operation

When the solenoid is energized, the two halves of the magnet core are drawn together, pulling down the moving contacts, thus making or breaking the circuit. When the current cuts out, springs force the contact bank into its original position, thus closing or opening the circuits.

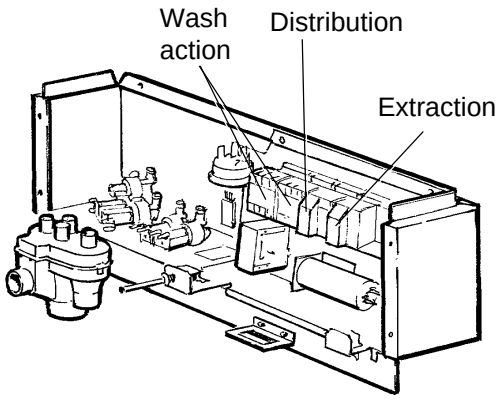
Trouble shooting

If the relay fails to operate despite power to the coil, turn off the power and check the solenoid by measuring the resistance across the terminals (1).

If the relay hums when power is applied, this indicates either a break in the insulator holding the moving contacts at the axle where it holds the top half of core (3) or a rusty core (4), which can be cleaned.

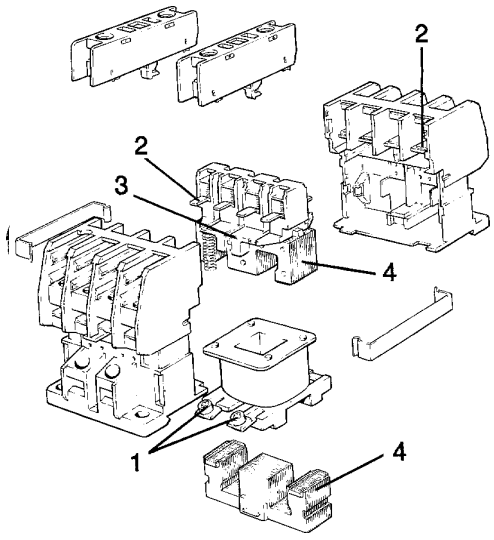
Make sure that the moving contact assembly moves freely. Always replace burnt or pitted contacts (2), do not reuse contacts.

23



0907

24



0301

Drive motor

Description

Fig. 25

The motor is mounted on top of the outer drum, on stepped feet to provide a means of adjusting the belt tension. The motor drives the drum through a gearbox and centrifugal clutch via a V-belt.

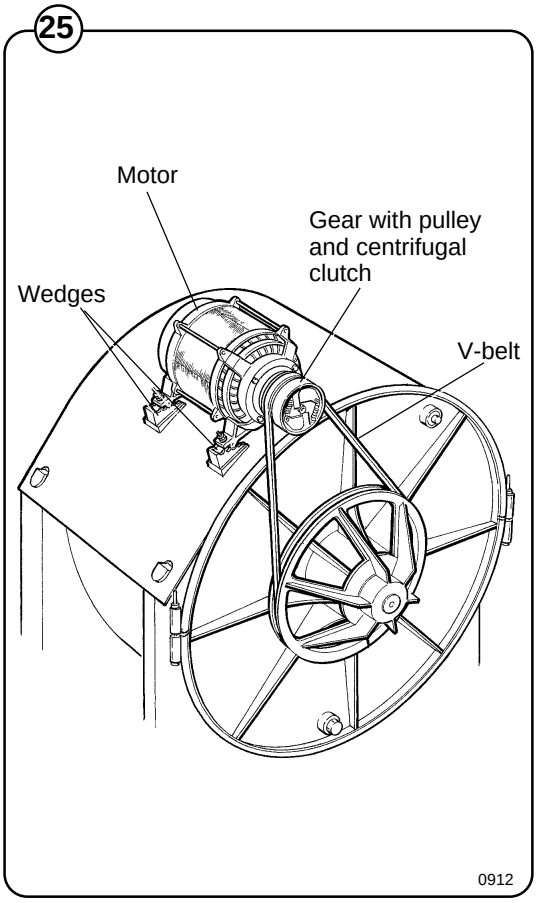
The motor consists of stator, rotor and end-shields with ball-bearings. The stator and the rotor consists of plates, insulated from each other and welded together. The stator is provided with slots in which three windings are wound (one 6-pole for washing action, one 4-pole for distribution speed and one 2-pole for extraction. The windings are impregnated with a temperature-resistant sound-insulating resin varnish according to class B. The end-shields are die-cast. The ball bearings are permanently lubricated.

The gearbox and centrifugal clutch are mounted in one housing on the motor shaft, with the outer casing serving as the belt drive pulley. At washing action speed, the clutch is disengaged, with the result that the motor drives the pulley through a gear reduction. At spin speed, the centrifugal clutch engages and gradually locks the planet carrier to the pulley casing. The pulley is thus accelerated up, by conventional clutch action, to full spin speed, at which speed it is rotating at the same speed as the motor shaft. This arrangement provides a change from washing action speed to spin speed, that requires only one drive motor.

Stepped motor mounts on the outer drum provide a means of adjusting the belt tension. Four bolts secure the motor to the outer drum. Wedge-shaped mounts with a number of steps between the motor feet and the mounting points allow the motor position to be adjusted to give the required belt tension.

The motor incorporates a thermal overload protector, embedded in the motor windings. If the temperature of the windings exceeds about 150° C, the contact interrupts the circuit to the motor contactors.

25



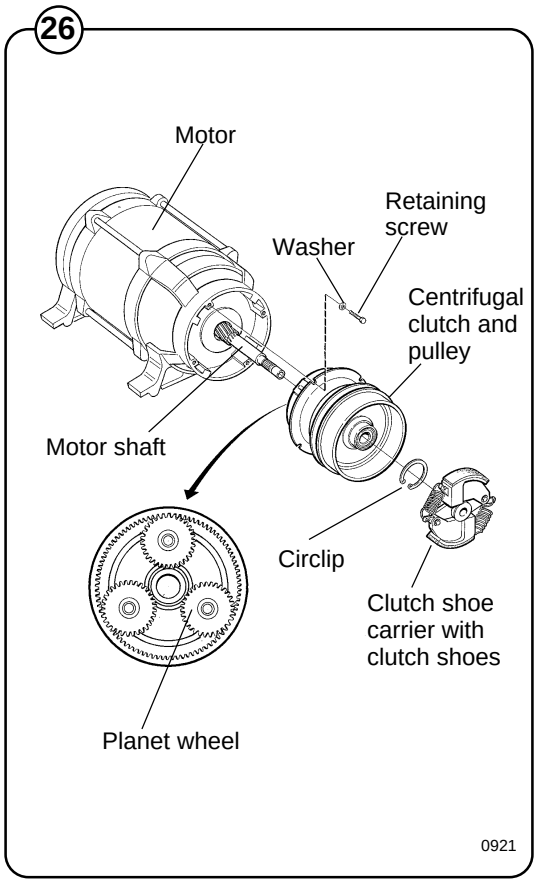
Tensioning the drive belt

1. Slacken the motor securing bolts.
2. Adjust the position of the step wedges until the correct belt tension is obtained. Always adjust the wedges in pairs so that the motor shaft remains parallel to the drum shaft.
3. Retighten the nuts securing the motor.

Replacement of clutch shoes.

Fig. 26

1. Slacken the nuts securing the motor and pull the step wedges outwards to slacken the drive belt. Remove the belt.
2. Disconnect the motor cable connector and remove the motor.
3. Using a puller, pull off the clutch shoe carrier from the motor shaft.
4. Gently tap the replacement clutch shoe carrier onto the motor shaft.
5. Reposition the motor and replace the nuts loosely. Fit the drive belt and connect the motor plug.
6. Tension the drive belt as described above under Tensioning the Drive Belt.



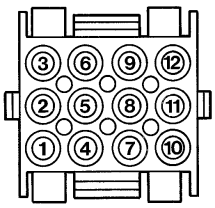
Replacing the gears

1. Slacken the nuts securing the motor and pull the step wedges outwards to slacken the drive belt. Remove the belt.
2. Disconnect the motor cable connector and remove the motor.
3. Using an puller, pull off the clutch shoe carrier from the motor shaft.
4. Remove the circlip from the motor shaft and remove the four screws that secure the gearbox to the motor casing.
5. Using puller extractor, pull the gearbox off the motor shaft.
6. Pass a new gearbox over the motor shaft and secure it to the motor frame by means of the four retaining screws.
7. Refit the circlip to the motor shaft and gently tap a replacement clutch shoe carrier onto the motor shaft.
8. Reposition the motor and replace the nuts loosely. Fit the drive belt and connect the motor plug.
9. Tension the drive belt as described above under Tensioning the Drive Belt.

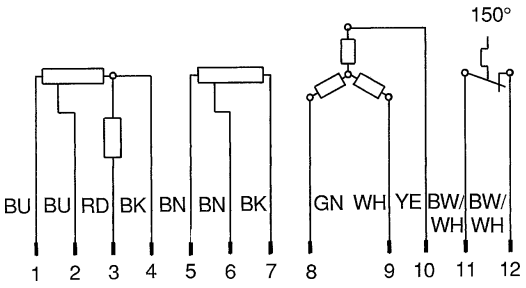
Checking the motor windings

Fig. (27) At room temperature, the motor windings should have the approximate resistances as shown below, when measured between the appropriate connectors in the plug:

(27)



Motor cable connector



Machine model	Resistance (ohms) between terminals: 1-4	2-4	3-4	5-7	6-7	8-9	8-10	9-10
Ex 7	2.6	1.6	3.5	2.6	1.6	4.7	4.7	4.7
EX 10 120V	1.3	0.8	1.7	1.3	0.8	3.4	3.4	3.4
Ex 10 208-240V	4.0	2.7	7.7	4.0	2.7	11.4	11.4	11.4

As a further check, the No-load current with V-belt removed is as follows:

Machine model	No-load current (amps) at terminals: Wash 8	9	10	Dist. 2	7	1	3	4	7
Ex 7	3.6	3.6	1.9	6.2	6.2	6.6	5.6	6.6	3.9
EX 10 120V	4.7	5.5	2.4	8.9	8.9	11.0	6.4	11.0	6.8
Ex 10 208-240V	3.0	2.6	1.45	5.4	5.4	6.8	3.6	6.8	4.5

Water level controls

Fig. (28) One pressure switch (1) is used to control the correct water levels during various cycles of the washing program.

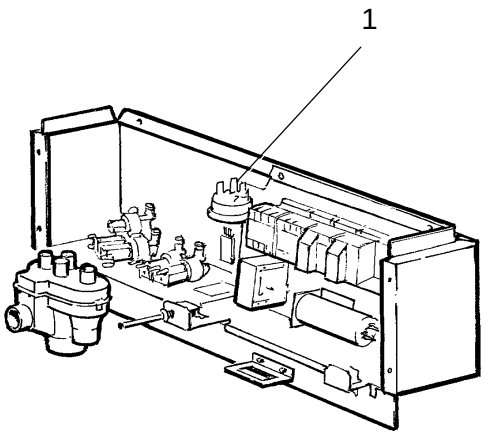
Adjustment

All pressure switches are factory-calibrated to meet specific requirements. The trip level for any one pressure switch can be changed only within narrow limits because each trip range requires a different set of springs.

Water level

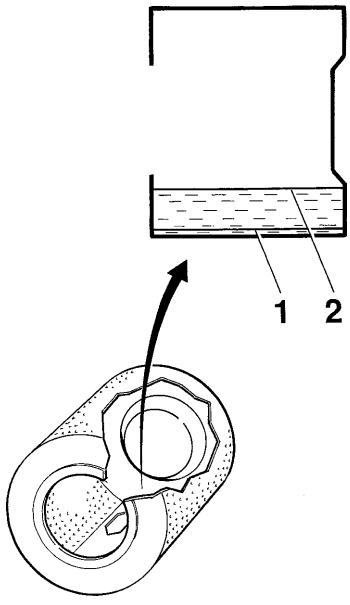
Fig. (29) As a guide for checking the level control for proper functioning, the low level should be when the water just reach to the top of the paddle (1), and the high level when the water just reach the outer edge of the tapered section in the rear of the of the drum (2).

28



0907

29



0904

Inlet valves

Construction

Fig. (30) The valve has a single-inlet with either one, two or three outlets, each with its own solenoid coil. The body is made of heat-resistant polyamid plastic and the solenoids encased in water-tight plastic.

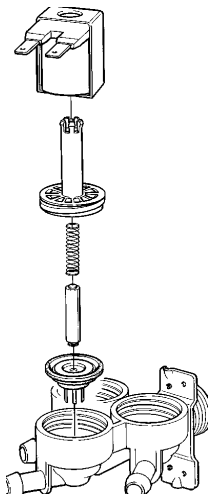
A filter screen on the inlet side prevents dirt from entering the valve. Flow restrictors can be placed at either the inlet or any of the outlets.

Operation

Fig. (31) When the solenoid is energized, the spring-loaded plunger is drawn up and the pilot valve in the center of the diaphragm open. Because of the difference in diameter between the pilot valve opening and the ventilating hole in the diaphragm, the pressure above the diaphragm drops to a point where the admission pressure below the diaphragm can lift the diaphragm, thus opening the valve.

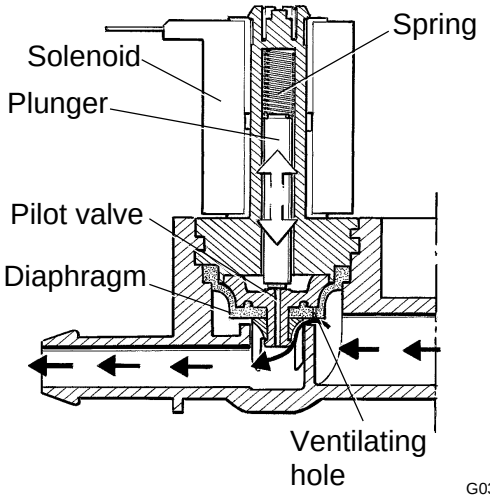
When the current to the solenoid is cut off, the plunger spring will press the plunger against the pilot opening of the diaphragm. The pressure above the diaphragm then rises to correspond to the water inlet pressure and the valve will close.

30



0932

31



G030

Repair instructions

Fig. (32) Limescale can block the holes in the valve diaphragm and interfere with the function of the valve.

It is therefore advisable to dismantle and clean the valve at certain regular intervals. The frequency depends on operating conditions and the level of contamination in the water.

If the valve does not open

- Check that power is supplied to the coil.
- Check the coil with an instrument to determine whether there is a break or a short circuit.
- Dismantle the valve (see below) and check the openings in the valve diaphragm.
- Check the inlet strainer and clean as required.
- Undo the coil and clean the surfaces of the magnetic core.

If the valve does not close

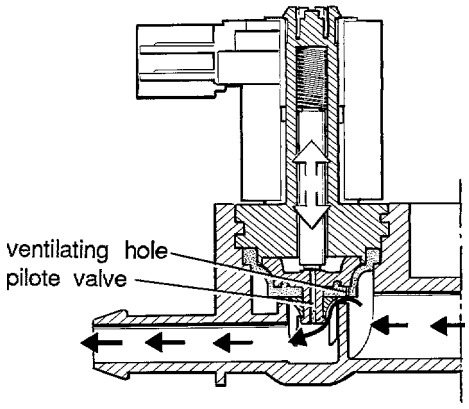
- Check that the coil is not live. The valve is normally closed when the magnet is not energised.
- Check the return spring.
- Check the diaphragm (pilot valve opening).

Dismantling the valve

Fig. (33)
- Pull the coil straight upwards. Use a screwdriver if necessary to carefully undo the coil.

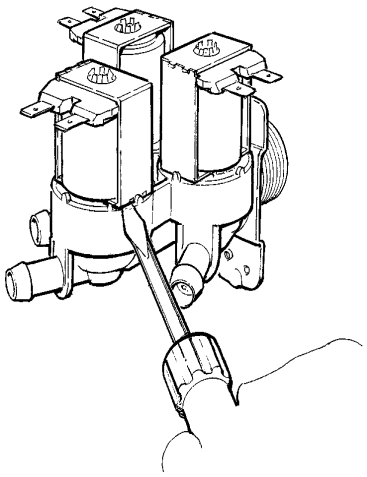
Fig. (34)
- Use the tool supplied (attached to one of the hoses when the machine is delivered) to open the valve housing. Slide the tool over the protruding plastic sleeve to that the pegs on the tool engage the corresponding sockets in the valve housing.
- Use a spanner or a pair of pliers and unscrew the upper part of the valve housing.

32



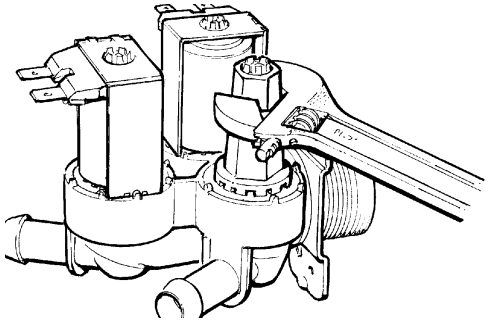
1186

33



0309

34



0310

Soap supply box

Fig. 35 The three-compartment soap supply box is located at the top of the machine. Viewed from the front, the compartments marked with figures 1, 2 and 3 are used as follows:

Compartment 1

This compartment is used for adding detergent to the wash at the start of the Soak cycle.

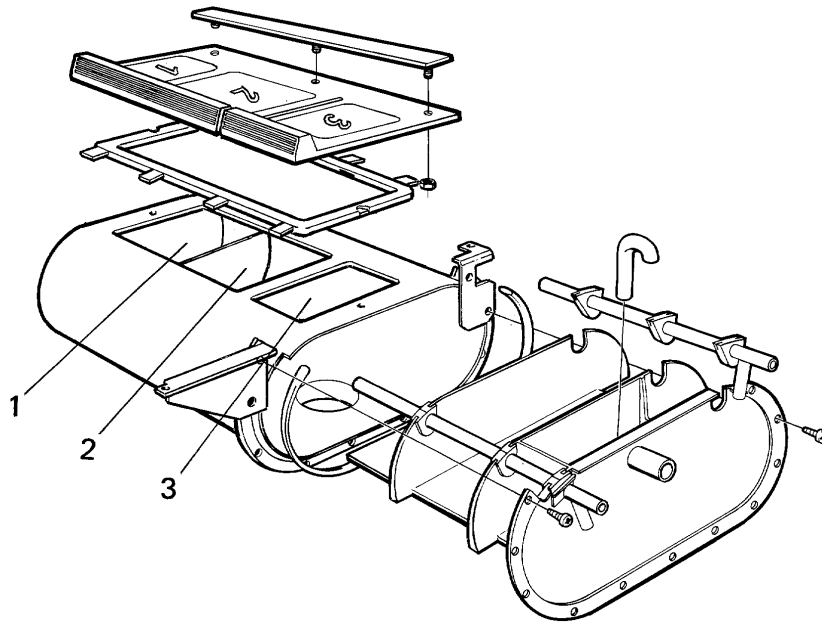
Compartment 2

This compartment is used for adding supplies to the wash at the beginning of the Wash cycle.

Compartment 3

The small compartment is used for adding fabric softener, which is flushed down by a siphon action at the start of the third rinse.

35



1182

Drain valve

Description

Fig. 36 The drain valve is a motor-operated membrane valve having a large opening cross-section to produce rapid emptying of the machine. The rapid flow action produces a self-cleaning effect, eliminating the necessity for a fluff filter.

The main parts of the valve are:

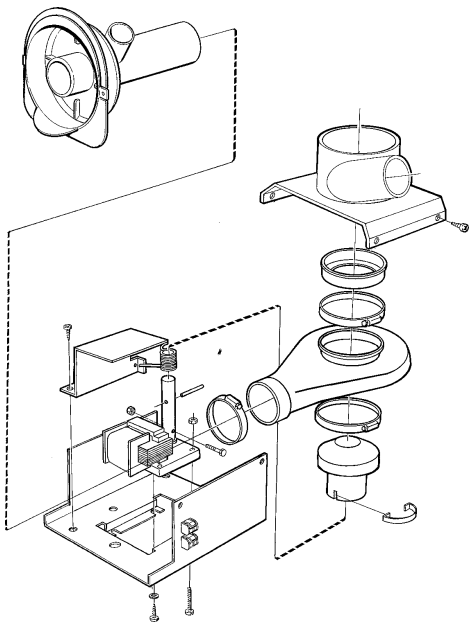
- Motor and gear
- Trapezoidal-threaded piston rod with piston and return spring
- Rubber membrane
- Connections for water filling, overflow, drain and level switch

When de-energised, the valve is open. In this state, the piston, under the action of the return spring, is at the bottom of its travel. The membrane follows the piston downwards and the valve is open.

Energizing the motor drives the piston upwards through the action of the gear and the trapezoidal thread, pressing the membrane against the valve seat and closing the valve.

The overflow connection is connected to the siphon breaker trap, so that water and foam are discharged directly to drain if the inlet valve or level switch should fail.

36



0919

Repair instructions

Lime deposits or dirt on the membrane can result in the valve not opening or closing correctly. The valve should therefore be cleaned at regular intervals, depending on operating conditions and water quality.

Valve does not open or close correctly

- Check that the motor is correctly energised
- Check that the piston rod can move freely
- Check that the membrane is not clogged with deposits

When changing the motor and gear assembly, note the following cable connections:

Brown cable: 60 Hz

Blue cable: Common

Black cable: 50 Hz

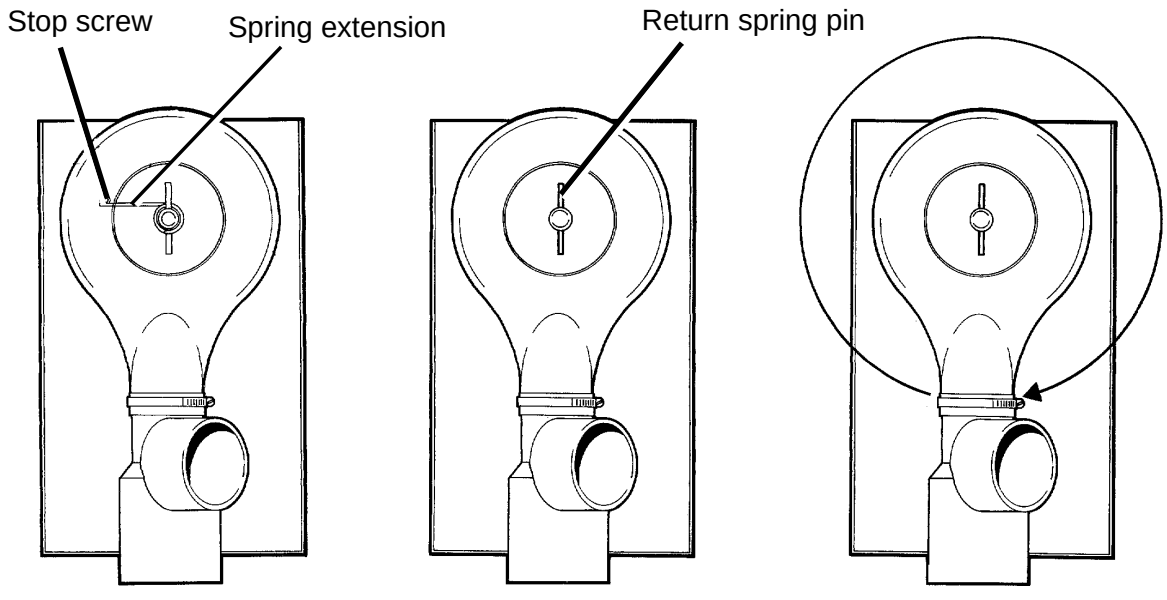
Pre-tensioning the return spring

Remove the valve casing.

Fig. 37

1. Turn the return spring so that the arm of the spring bears against the stop screw.
2. Fit the piston rod so that the slot in which the spring is to engage is aligned with the casing. Place the valve casing over the return spring

37



Procedure for use

Preparations

Sort the laundry according to the wash program categories listed on the control panel. Check washing instructions on garment tags.

Empty pockets and close zippers.

Open door, put laundry in the machine and close door.

Washing

Fig. (38) Turn control knob to desired wash program.

Indicator panel now shows which operations are included in the program.

Fig. (39) Three lights indicate where the detergent and fabric softener should be added.

Fig. (40)

- pre-wash detergent in compartment 1
- regular detergent in compartment 2
- liquid fabric softener in compartment 3

Follow dosage instructions on detergent package.

Liquid detergent can only be added at the beginning of the specific cycle.

Starting coin-operated machine:

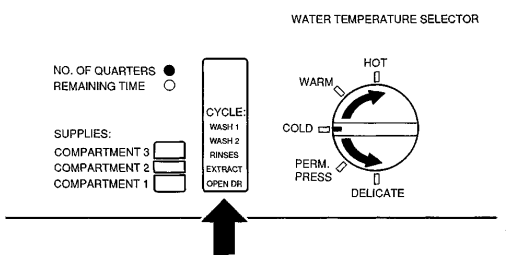
The digital display shows how many coins or tokens should be used. When the right amount has been added the machine starts automatically.

Starting non-coin-operated machine:

Press **START.**

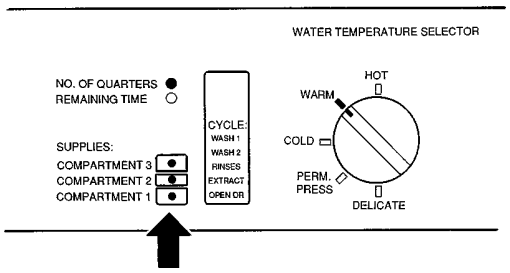
When the machine has started the display will show the time remaining in the cycle.

38



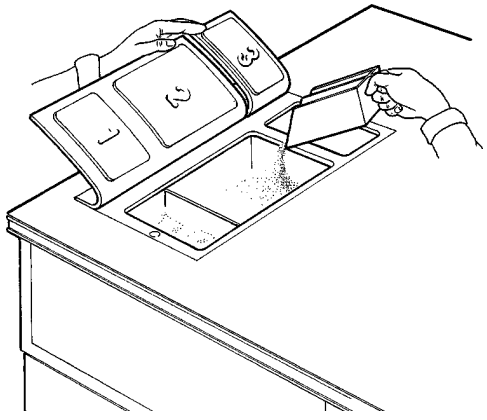
0979

39



0980

40



0959

Changing Programs

Fig. 41 Within 10 sec of starting the machine a new cycle can be selected by turning the control knob to the desired program. The machine will start over with the new program. It will not drain any water from the drum.

Finishing

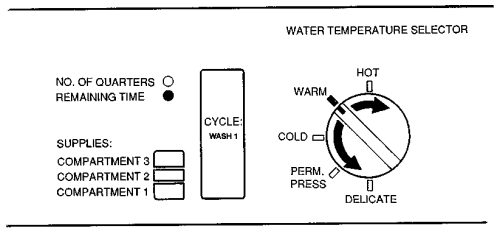
Fig. 42 When **" OPEN DR"** is displayed on the control panel the door can be opened.

When necessary, clean the door gasket and detergent compartments. Wipe off the machine with a damp cloth.

Leave the door open when the machine is not in use.

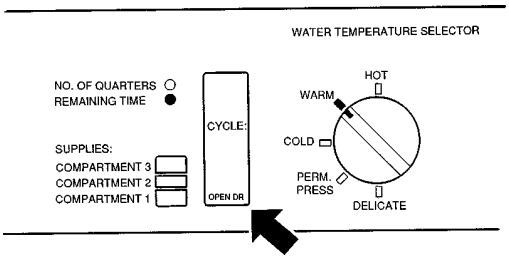
Leave the machine in the condition you would expect to find it in.

41



0981

42



0982

Programming

When programming the machine, the program selector is used in conjunction with a special function selector switch not available to the general user.

Fig. 43 The function selector switch is situated behind the coin box.

The following values can be programmed:

- number of coins or tokens per wash cycle
- price reduction for a given time (%)
- program group selection

The function selector can also be used to read the built in coin counter and to check the different operations of the machine. (See section Service Programs)

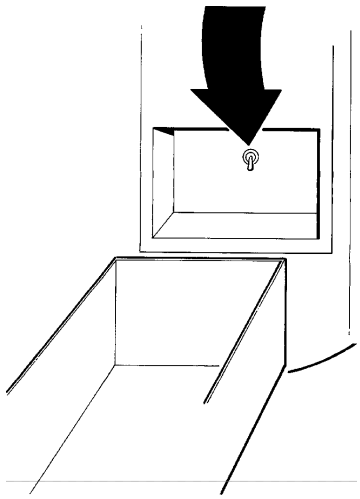
Number of coins or tokens per wash

The number of coins or tokens per wash can be set to a value from 01 to 99. The machine can only be programmed for one type of coin and one price, for all wash programs.

Fig. 44
- Turn the program selector to **HOT.**
- Depress the function selector switch. The current value set is shown on the display.
- If the function selector is held down, the value counts up. If a lower amount is desired, the value must first be counted up to 99 and then from 00 up to the correct value.

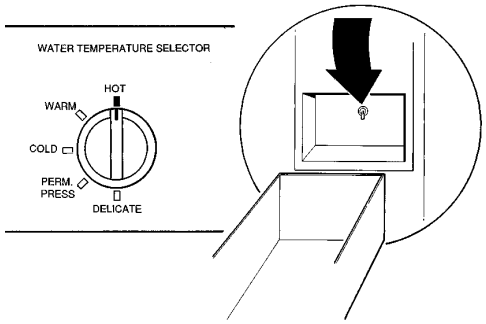
Fig. 45
- When programming is complete, turn the program selector as in the figure and release the function selector.

43



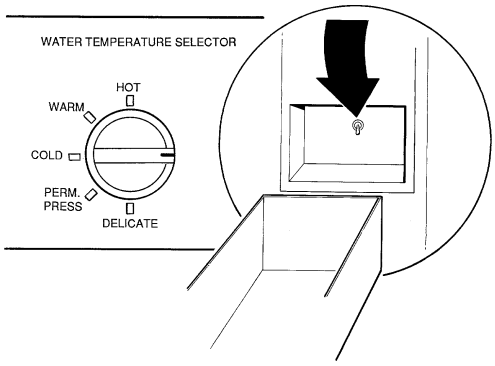
1160

44



1162

45



1163

Price reduction

It is possible to program a percentage reduction of the price.

An example:

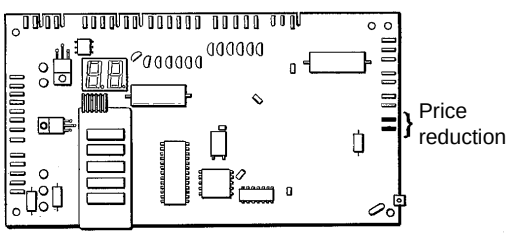
- The normal price for one wash program is four coins.
- If you wish to make a price reduction to three coins, program the percentage 25 (1/4 reduction of the normal price).

Fig. 46 The price reduction is activated when a voltage signal (voltage of signal = mains voltage) from e.g. a timer, is connected to the contacts as shown in the figure.

Fig. 47
- Turn the program selector to **WARM.**
- Depress the function selector switch. The set value is shown on the display.
- By holding down the function selector the percentage is increased. If a lower figure is desired, the value must first be counted up to 99 and then from 00 to the correct value.

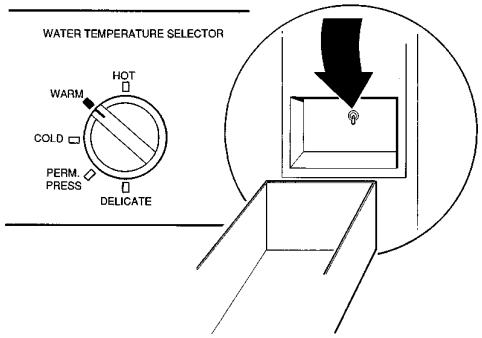
Fig. 48
- When programming is complete, turn the program selector as in the figure and release the function selector.

46



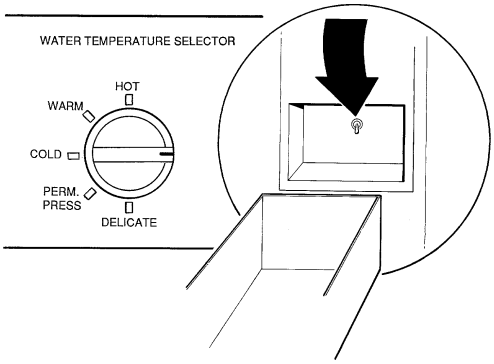
1164

47



1165

48



1163

Program Group Selection

The electronic memory includes 20 programs divided into 4 groups of 5 programs.

- Group 1 includes the 5 standard programs HOT, WARM, COLD, PERMANENT PRESS and DELICATE, all including a pre-wash and 3 rinses.
- Group 2 includes the standard programs but without a pre-wash.
- Group 3 includes the standard programs but without a pre-wash and with only two rinses.
- Group 4 includes the standard programs but without a pre-wash and with only one rinse.

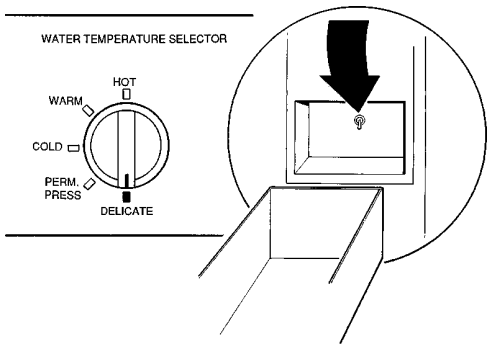
The programs are specified in the section on ”Wash Programs” in the handbook.

Fig. 49
- Turn the program selector to **DELICATE.**
- Depress the function selector switch. Now the display shows SG (Select Group). When you release the function selector switch the set value is shown on the display.

Fig. 50
- You can change the program group by repeatedly depressing the function selector switch until the right group number appears on the display.

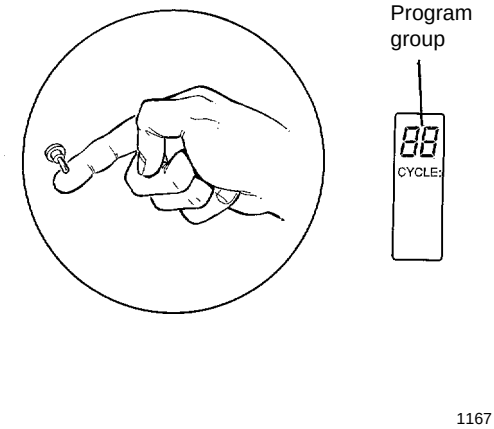
Fig. 51
- When programming is complete, turn the program selector as in the figure and release the function selector.

49



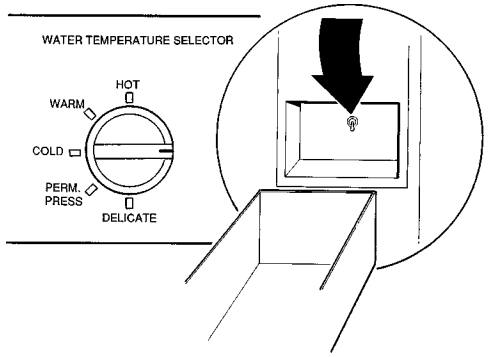
1166

50



1167

51



1163

Reading the Coin Counter

The machine has a built in four digit coin counter mechanism which counts one step with each coin. The counter cannot be reset.

To read the counter follow these steps:

Fig. 52

- Turn the program selector to **PERM PRESS.** Depress the function selector switch.

Fig. 53

- The **No of Quarters** light is turned on and the first two digits of the correct number are displayed. Depress the function selector again. Now the **Remaining Time** light turns on and the two last digits of the correct count are displayed.
- Continuing to press the function selector switches the display back and forth between these two values.
- An example:

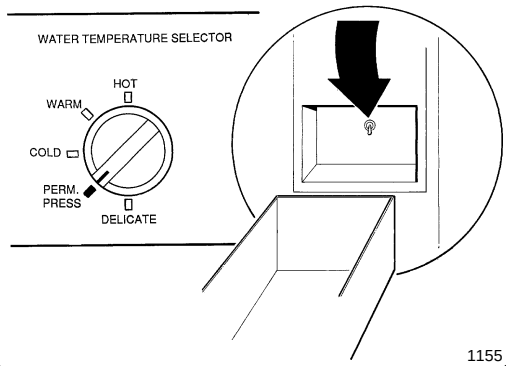
Fig. 54

If the counter reads 1234 the digits 12 will be displayed when **No of Quarters** is lit and 34 will be displayed when **Remaining Time** is lit.

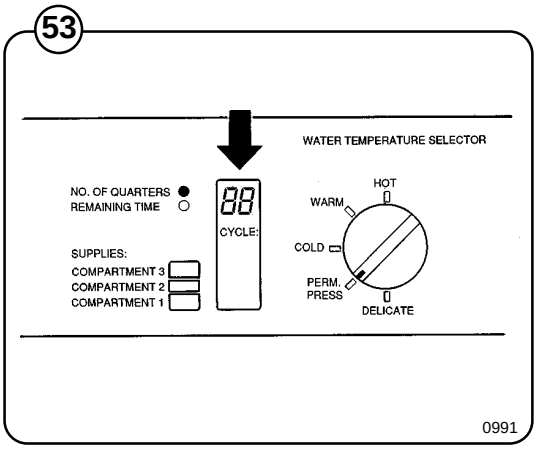
Fig. 55

- When programming is complete, turn the program selector as in the figure and release the function selector.

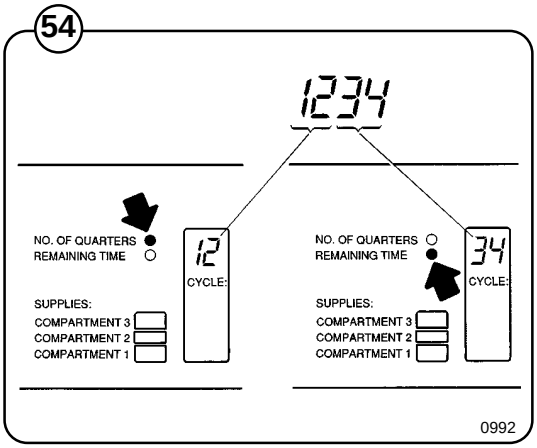
52



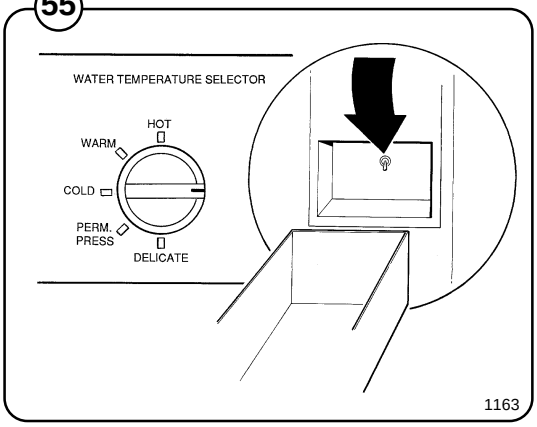
53



54



55



Service Programs

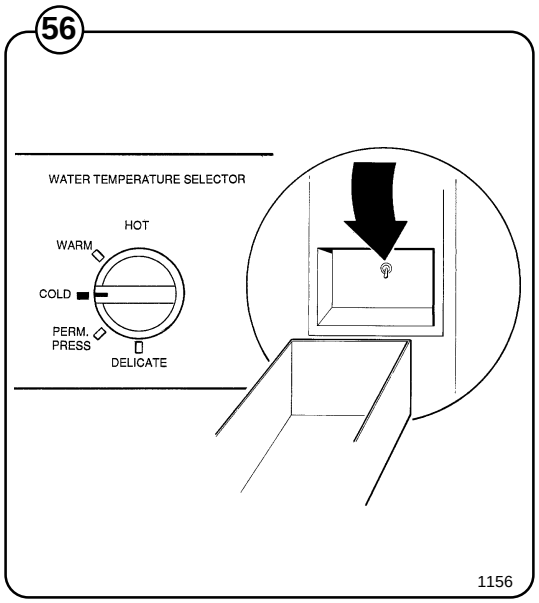
It is possible to manually test many of the functions of the washing machine using the function selector switch. One can also check switches and level sensors by reading the indicator lights on the control panel.

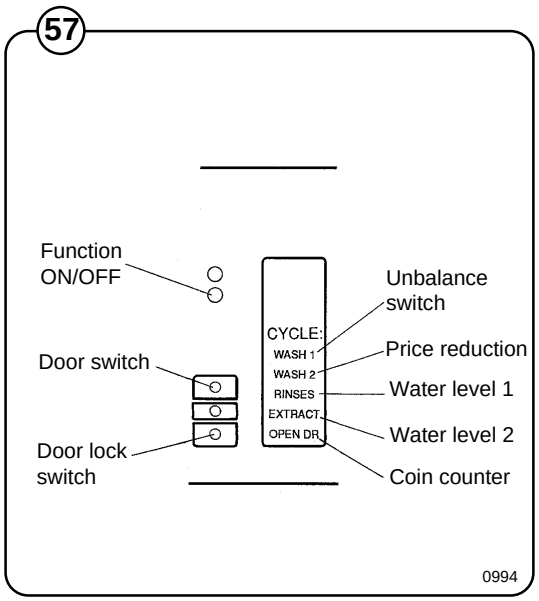
Checking Switches and Level Sensors

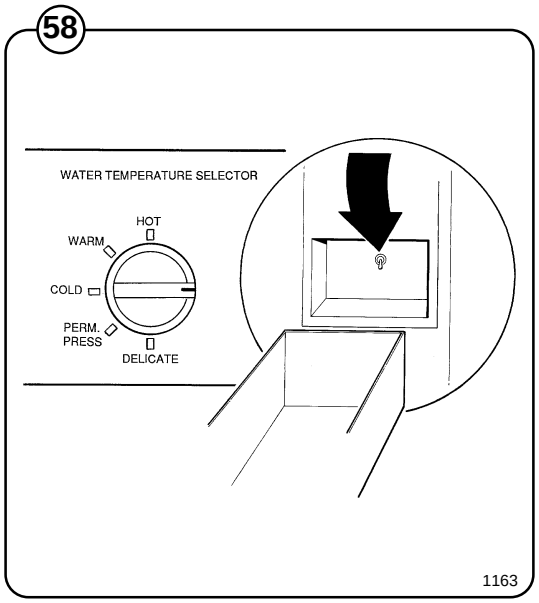
Fig. 56 Turn the program selector to **COLD.** Depress the function selector switch and the display will show ”SE” for ”Service Program”. Now you can check different switches and level sensors by reading the indicator lights on the panel according to the table below.

Indicator on panel	Function
Wash 1	Unbalance switch
Wash 2	Price reduction
Rinses	Water Level 1
Extract	Water Level 2
Door Open	Coin Counter
Compartment 3	Door switch
Compartment 1	Door lock switch
Remaining Time	Function On/Off

Fig. 58 When the check has been completed turn the temperature selector as in the figure and release the function selector switch. The machine will return to normal operation.







Function check

Fig. (59) Turn the program selector to **COLD.** Press the function selector switch and the display will show ”SE” for ”Service Program”.

1 Turn the program selector to one of the settings **HOT, WARM, COLD** or **PERM PRESS** depending on which group of functions (see table below) you wish to check.

2 Select the right function within the group by pressing the function selector and holding it for more than 1.5 seconds. The figure in the display will now count up. Release the button when the correct number within the chosen group (see table below) is displayed.

Fig. (60) By repeatedly pressing the function selection switch (less than 1.5 seconds) the given function can be turned on and off. The **”Remaining time”** light indicates whether the function is on (light on) or off (light off).

Fig. (61) When the check has been completed, turn the program selector as in the figure and release the function selector switch. The machine will now return to normal washing.

Table: Functions to be selected

Group 1 (HOT)

1 Cold water

2 Warm water

Group 2 (WARM)

1 Flush in detergent compartment 1

2 Flush with cold water in detergent compartment 2

3 Flush in detergent compartment 3

4 Flush with warm water in detergent comparment 2

Group 3 (COLD)

1 Motor, right turn

2 Motor, left turn

3 Motor, distribution

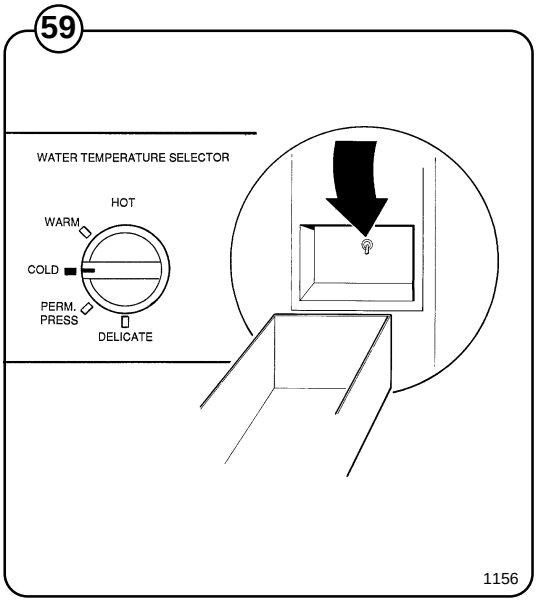
4 Motor, spinning

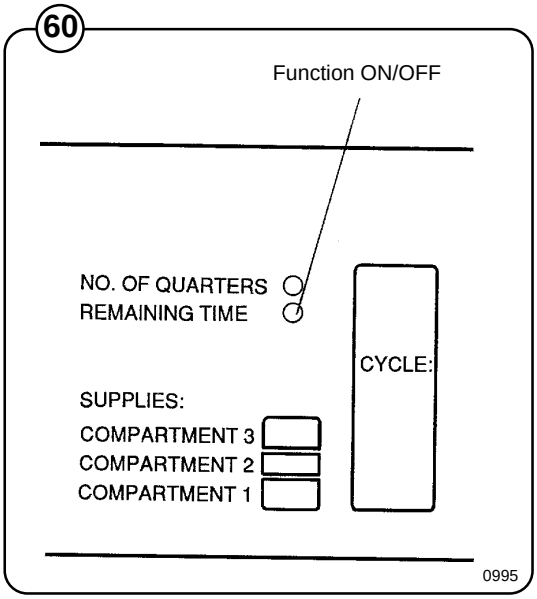
IMPORTANT
The motor must stop completley before starting another motor operation.

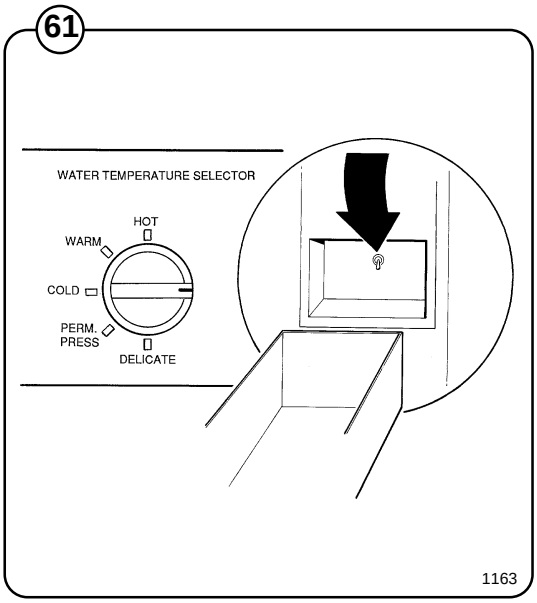
Group 4 (PERM PRESS)

1 Drain

2 Door lock







Wash Programs

The electronic program memory contains 20 programs divided into 4 groups of 5 programs.

A group can be selected by using the program selector together with a special function selector switch, see section on ”Programming”.

Fig. 62
- Group 1 includes the five standard programs HOT, WARM, COLD, PERMANENT PRESS and DELICATE, all with pre-wash and three rinses.

Fig. 63
- Group 2 includes the standard programs without pre-wash.

Fig. 64
- Group 3 includes the standard programs but without pre-wash and with only 2 rinses.

Fig. 65
- Group 4 includes the standard programs but without pre-wash and with only one rinse.

62

Group 1

	HOT			WARM			COLD			PERM PRESS			DELICATE 1)		
	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level
Wash 1	3	Warm	High	3	Warm	High	3	Cold	High	3	Warm	High	-	-	-
Detergent 1															
Drain	1			1			1			1					
Wash 2	6	Hot	Low	6	Warm	Low	6	Cold	Low	6	Warm	Low	4	Warm	High
Detergent 2															
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5					
Rinse 1	1	Cold	High	1	Cold	High	1	Cold	High	1	Cold	High	1	Cold	High
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5			0.5		
Rinse 2	1	Cold	**High**	1	Cold	High	1	Cold	High	1	Cold	High	2	Cold	Low 2)
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5			1		
Rinse 3	2	Cold	Low	2	Cold	Low	2	Cold	Low	2	Cold	Low			
Detergent 3															
Drain	1			1			1			1					
Extract	4			4			4			2					
Shake-out	0.5			0.5			0.5			0.5			0.5		
Total time (water fill time not included)	24			24			24			22			12		

1) Drum rotation 3 seconds, pause 12 seconds
2) Detergent 3

63

Group 2

	HOT			WARM			COLD			PERM PRESS			DELICATE 1)		
	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level
Wash 2	6	High	Low	6	Warm	High	6	Cold	High	6	Warm	High	4	Warm	High
Detergent 2															
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5					
Rinse 1	1	Cold	High	1	Cold	High	1	Cold	High	1	Cold	High	1	Cold	High
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5					
Rinse 2	1	Cold	**High**	1	Cold	High	1	Cold	High	1	Cold	High	2	Cold	Low 2)
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5			1		
Rinse 3	2	Cold	Low	2	Cold	Low	2	Cold	Low	2	Cold	Low			
Detergent 3															
Drain	1			1			1			1					
Extract	4			4			4			2					
Shake-out	0.5			0.5			0.5			0.5			0.5		
Total time (water fill time not included)	20			20			20			18			11.5		

1) Drum rotation 3 seconds, pause 12 seconds
2) Detergent 3

0997

64

Group 3

	HOT			WARM			COLD			PERM PRESS			DELICATE 1)		
	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level
Wash 2	8	Hot	High	8	Warm	High	8	Cold	High	8	Warm	High	4	Warm	High
Detergent 2															
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5					
Rinse 1	1	Cold	High	1	Cold	High	1	Cold	High	1	Cold	High	1	Cold	High
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5					
Rinse 2	2	Cold	High	2	Cold	High	2	Cold	High	2	Cold	High	2	Cold	High
Detergent 3															
Drain	1			1			1			1			1		
Extract	4			4			4			2			1		
Shake-out	0.5			0.5			0.5			0.5			0.5		
Total time (water fill time not included)	19.5			19.5			19.5			17.5			11.5		

1) Drum rotation 3 seconds, pause 12 seconds

0998

65

Group 4

	HOT			WARM			COLD			PERM PRESS			DELICATE 1)		
	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level	Time (min)	Temp	Water level
Wash 2	8	Hot	High	8	Warm	High	8	Cold	High	8	Warm	High	6	Warm	High
Detergent 2															
Drain	1			1			1			1			1		
Extract	0.5			0.5			0.5			0.5					
Rinse 1	3	Cold	High	3	Cold	High	3	Cold	High	3	Cold	High	3	Cold	High
Detergent 3															
Drain	1			1			1			1			1		
Extract	4			4			4			2			1		
Shake-out	0.5			0.5			0.5			0.5			0.5		
Total time (water fill time not included)	18			18			18			16			12.5		

1) Drum rotation 3 seconds, pause 12 seconds.

0999

Program group 1

Wash program, Hot

Fig. 66 After the machine has started and the door automatically locked, the drain valve will close and the hot and cold water valves will open to fill the machine with mixed hot and cold water to the high level determined by the level control. Detrgent from compartment 1 is mixed with the incoming water.

When this level is reached, both water valves will close. During filling and then through the wash program the drum has a reversing rotation.

At the end of the soak, the drain valve will open and empty the machine. Then hot water will fill to the low level determined by the level control. At the same time detergent from compartment 2 is mixed with the incoming hot water.

The water level controlled machine will now wash the fabrics for 6 minutes. The machine is then emptied and the first extraction is started.

After this extraction cold water is filled to the high level for the first rinse which lasts one minute. Then the drain valve will open for one minute followed by spin extraction for 30 seconds. After the extraction comes the second rinse in cold water, ending with spin extraction, whereafter the third rinse is started. Fabric softener is automatically admitted during the third rinse. The fabrics are rinsed in cold water for two minutes followed by a spin extraction of four minutes duration. Finally there is a shake out for half a minute.

66

	HOT			
	Time (min)	Temp	Water level	
Wash 1	3	Warm	High	
Detergent 1				
Drain	1			
Wash 2	6	Hot	Low	
Detergent 2				
Drain	1			
Extract	0.5			
Rinse 1	1	Cold	High	
Drain	1			
Extract	0.5			
Rinse 2	1	Cold	**High**	
Drain	1			
Extract	0.5			
Rinse 3	2	Cold	Low	
Detergent 3				
Drain	1			
Extract	4			
Shake-out	0.5			
Total time (water fill time not included)	24			

1000

Wash Program, Warm

Fig. 67 On starting the machine, the door will be automatically locked, and the pre-wash will be carried out as previously described, whereafter the main wash is started.

As the main wash is started, the drain valve closes, detergent is admitted and mixed hot and cold water is filled to the low level.

On reaching this level, the water valves are closed.

The water level controlled machine will now wash the fabrics for six minutes. The machine is then emptied and the first extraction is started.

After this extraction cold water is filled for the first rinse which lasts one minute, followed by spin extraction for 30 seconds.

After this extraction comes the second rinse in cold water ending with spin extraction, whereafter the third rinse is started. Fabric softener is automatically admitted during the third rinse. The fabrics are rinsed with cold water for two minutes followed by a spin extraction of four minutes duration. Finally there is a shake out for half a minute.

67

	WARM		
	Time (min)	Temp	Water level
Wash 1	3	Warm	High
Detergent 1			
Drain	1		
Wash 2	6	Warm	Low
Detergent 2			
Drain	1		
Extract	0.5		
Rinse 1	1	Cold	High
Drain	1		
Extract	0.5		
Rinse 2	1	Cold	High
Drain	1		
Extract	0.5		
Rinse 3	2	Cold	Low
Detergent 3			
Drain	1		
Extract	4		
Shake-out	0.5		
Total time (water fill time not included)	24		

1001

Wash Program, Cold

Fig. 68

On starting the machine, the door will be automatically lock, the drain valve close, the cold water valve open and the pre-wash carried out as previously described, whereafter the main wash is started.

As the main wash is started, the drain valve closes, detergent is admitted and cold water is filled to the low level.

On reaching this level, cold water is closed.

The water level controlled machine will now wash the fabrics for six minutes. The machine is then emptied and the first extraction is started.

After this extraction, cold water is filled for the first rinse which lasts one minute, followed by spin extraction for 30 seconds.

After this extraction comes the second rinse in cold water concluded with spin extraction, whereafter the third rinse is started.

Fabric softener is automatically admitted during the third rinse. The fabrics are rinsed with cold water for two minutes followed by a spin extraction of four minutes duration. Finally there is a shake out for half a minute.

68

	COLD		
	Time (min)	Temp	Water level
Wash 1	3	Cold	High
Detergent 1			
Drain	1		
Wash 2	6	Cold	Low
Detergent 2			
Drain	1		
Extract	0.5		
Rinse 1	1	Cold	High
Drain	1		
Extract	0.5		
Rinse 2	1	Cold	High
Drain	1		
Extract	0.5		
Rinse 3	2	Cold	Low
Detergent 3			
Drain	1		
Extract	4		
Shake-out	0.5		
Total time (water fill time not included)	24		

1002

Wash Program, Permanent Press

Fig. (69) On starting the machine, the door will automatically lock, the drain valve close, the hot and cold water valves open and the pre-wash will be carried out as previously described, whereafter the main wash is started.

As the main wash is started, the drain valve closes, detergent is admitted and mixed hot and cold water is filled to the low level.

On reaching this low level, the water valves are closed and the wash motor starts its reversing rotation.

The water level controlled machine will now wash the fabrics for six minutes. the machine is then emptied and the first extraction is started.

After this extraction, cold water is filled for the first rinse which lasts one minute, followed by spin extraction for 30 seconds.

Fabric softener is automatically admitted during the third rinse. The fabrics are rinsed with cold water for two minutes followed by a spin extraction of two minutes duration. Finally there is a shake out for half a minute.

69

	PERM PRESS		
	Time (min)	Temp	Water level
Wash 1	3	Warm	High
Detergent 1			
Drain	1		
Wash 2	6	Warm	Low
Detergent 2			
Drain	1		
Extract	0.5		
Rinse 1	1	Cold	High
Drain	1		
Extract	0.5		
Rinse 2	1	Cold	High
Drain	1		
Extract	0.5		
Rinse 3	2	Cold	Low
Detergent 3			
Drain	1		
Extract	2		
Shake-out	0.5		
Total time (water fill time not included)	22		

1003

Wash Program, Delicate

Fig. 70

On starting the machine, the door will automatically lock, the drain valve closes, the hot and cold water valves open and the main wash is started (there is no pre-wash in program Delicate).

As the main wash is started, the drain valve closes, detergent is admitted and mixed hot and cold water is filled to the high level.

On reaching this level, the water valves are closed.

The water level controlled machine will now wash the fabrics for four minutes. In the Delicate wash program the drum rotates for 3 seconds followed by a pause of 12 seconds. The machine is then emptied and and the first extraction is started.

After this extraction, cold water is filled for the first rinse which lasts one minute, followed by spin extraction for 30 seconds.

Fabric softener is automatically admitted during the second rinse. The fabrics are rinsed with cold water for two minutes followed by a spin extraction of one minute duration. Finally there is a shake out for half a minute.

70

	DELICATE 1)		
	Time (min)	Temp	Water level
Wash 1	-	-	-
Detergent 1			
Drain			
Wash 2	4	Warm	High
Detergent 2			
Drain	1		
Extract			
Rinse 1	1	Cold	High
Drain	1		
Extract	0.5		
Rinse 2	2	Cold	Low 2)
Drain	1		
Extract	1		
Rinse 3			
Detergent 3			
Drain			
Extract			
Shake-out	0.5		
Total time (water fill time not included)	12		

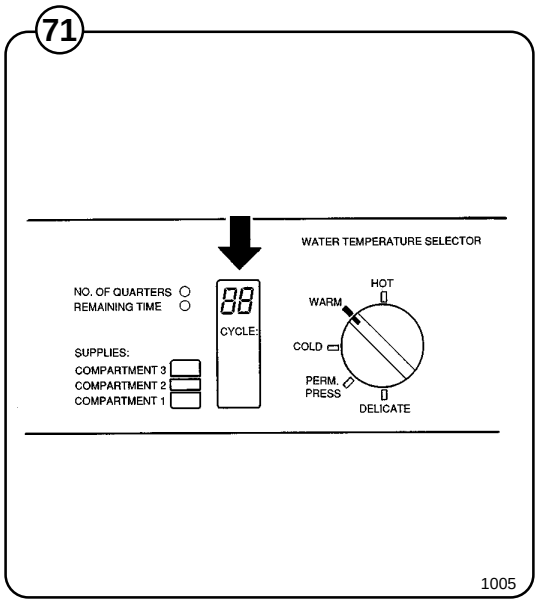
1004

Service information

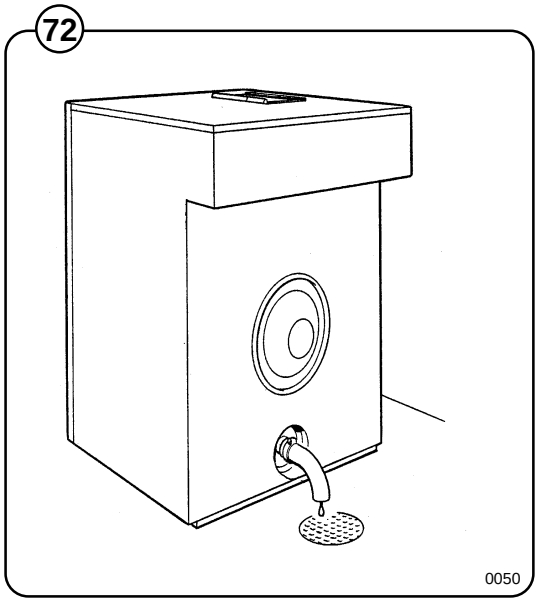
Fig. (71) A fault in the program is indicated by a flashing digital code in the window on the front panel.

Fault code	Cause
LE	Water level not reached. If not coin operated machine, turn on the water tap, press START and the the machine will make a new try.
do	Door is open.
dc	Water left in machine after a drain period.
LC	Water in machine at program start.
ub	Unbalance error.
dl	Door lock not operating.
cd	Door not locked. Close the door and the machine will start.

When the machine is ready for use, the main external power supply must be turned ”Off” and then ”On” again, except for fault LE and cd.



Maintenance



Preventive maintenance has been reduced to a minimum by the careful design of reliable components and material.

However, the following measures should be taken at regular intervals and in proportion to the hours of service.

Daily

- Check the door lock and interlock before starting operations.
- Start the machine and check that the door remains locked while the machine is operating. Use the Rapid Advance function to step the program to the Stop position and check that the door stays locked until 30 seconds after the program is completed.
- Clean the door seal and remove powder residue. Check that the door does not leak.
- Clean the detergent compartments and wipe down the machine with a damp cloth.
- Check that the drain valve does not leak, and that it opens properly.

Fig. 72

Weekly

- Remove lint or fluff remnants from the drain opening, joints in drain pipes, etc.

Every third month

- Check for leaks in valves, hoses and connections.
- Check that the V-belt between the motor and pulley is undamaged and correctly tensioned.

IMPORTANT!

Make certain that all electrical power to the machine is shut off before removing top or rear panels.

Trouble shooting

If machine does not start

Check to ensure that:

- it is turned on at the mains.
- the manual shut-off valves are open.
- a program has been selected.
- the door is locked
- if it is a coin-operated machine, that the correct amount of coins or tokens have been inserted.
- Check for fault indication on display (see section "Service information").
- the glass cartridge fuse is not blown.

If water does not drain

Fig. (73)

A Check for fault indication on display (see section "Service information").

B Check drain valve for proper operation. The drainvalve can be operated separately, see section "Service programs".

C Disconnect drain hose connected to drain line. If full flow of water comes out, the problem is in the main waste line. If water flow is slow, the problem is the accumulation of foreign materials between the drain valve and shell outlet of machine. Clean valve body of any foreign objects found.

If machine does not extract

Fig. (74)

A Check for fault indication on display (see section "Service information").

B Check extract relay and relay coil for proper operation.The relay can be operated separately, see section "Service programs".

If motor does not operate at wash speed

Fig. (75)

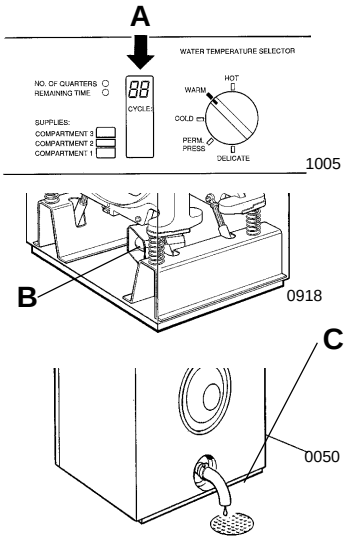
A Check for fault indication on display (see section "Service information").

B Check wash relays. The relays can be operated separately, see section "Service programs".

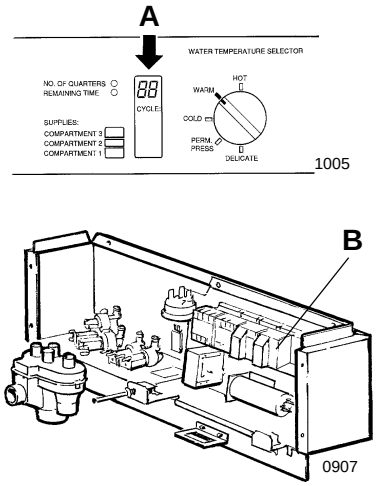
C Check motor and V-belt.

D Review procedures outlined under section ”If machine does not start” above.

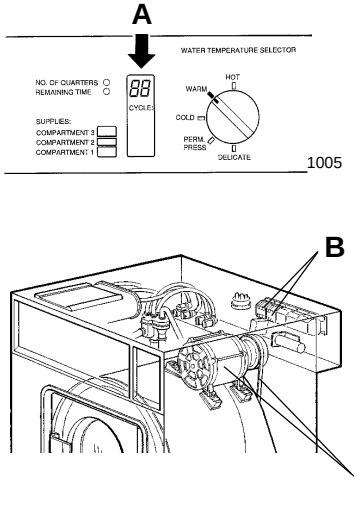
(73)



(74)



(75)



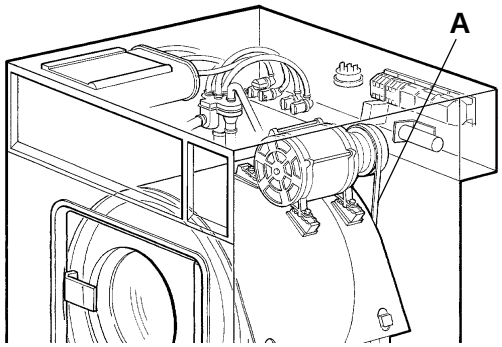
If machine runs slowly on wash speed or there is a slapping or thumping noise.

Fig. 76 **A** Replace V-belts

If a metallic noise can be heard at rear of machine

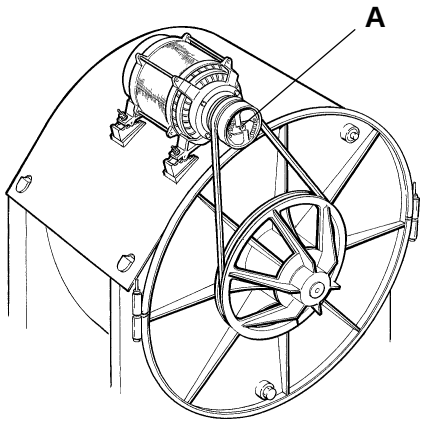
Fig. 77 **A** Tighten pulley on motor shaft

76



0918

77



0912

If there is a leaking around the glass

Fig. (78)

A Replace door gasket if worn.

If water does not enter the machine.

Fig. (79)

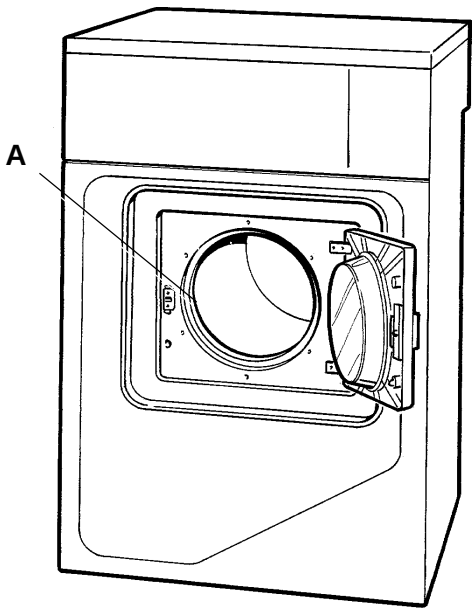
A Be sure manual shut-off valves are in open position.

B Check wires leading to valve coils.

C Check the coils on inlet valves.The valves can be operated separately, see section "Service programs".

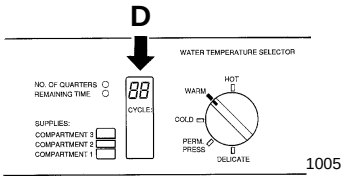
D Check for fault indication on display (see section "Service information").

78

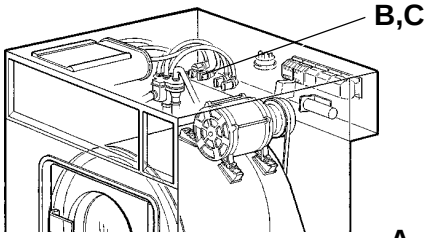


1606

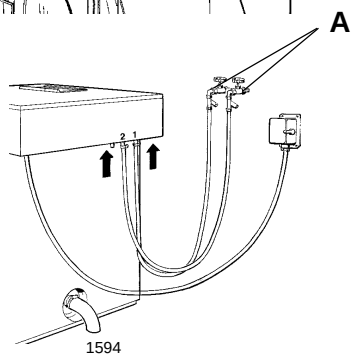
79



1005



0918



1594

If water continues to fill without stopping.

Fig. 80

A Check hose attached to level control unit.

B Check inlet valves (see section "Inlet valve", page 22). The valves can be operated separateley, see section "Service programs".

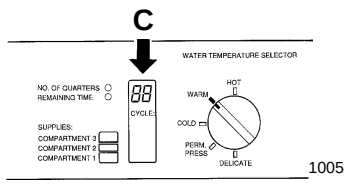
If water continues to flow without filling machine.

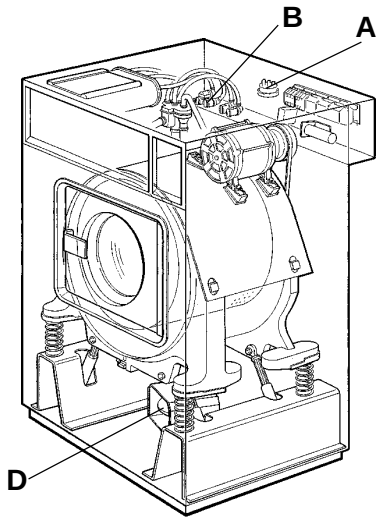
Fig. 80

C Check for fault indication on display (see section "Service information").

D Check seating of drain valve. The drainvalve can be operated separately, see section "Service programs".

80





0918