

Integrated Dishwashers Series 634 with Automatic Progams

IGVS 649	IG 657 IG 669
IGVS 659	IG 647 IG 659
IGV 659	IG 656 IG 644
	IG 634



THE HEART OF A GOOD KITCHEN



Service Manual: H7-71-02

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1. Safety



Repairs may only be carried out by a qualified electrician! Inexpert repairs may lead to risks and damages for the user!

To prevent electric shocks, please observe the following tips:

- In the event of faults, housing and frame may be live!
- Touching live components inside the appliance may cause dangerous currents to flow through your body!
- Prior to repairs, disconnect the appliance from the mains!
- · When inspecting live parts, a residual current operated device must be used at all times!
- The ground wire resistance must not exceed that specified in the standard! It is of vital importance for ensuring the safety of people and the functioning of the appliance.
- On completion of repairs, an inspection must be carried out in accordance with VDE 0701 [Association of German Electrical Engineers] or the corresponding regulations for your country!
- On completion of repairs, a function and impermeability inspection must be carried out.



Caution!

Danger!

Make sure you observe the following instructions:

- Due to the all-pole disconnection (relay, press switch), when carrying out measurements via the connector plug in accordance with VDE 0701, a direct measurement must be used to check the heating (flow heater) for insulation faults or the appliance's differential current must be measured!
- When changing additional devices and the pump pot, beware of sharp edges around the stainless steel components.
- The appliances must be disconnected from the mains prior to all repairs. If inspections must be carried out on live appliances, make sure you use a residual current operated device.



Sharp edges: Use protective gloves.



Components may be electrostatic! Observe handling precautions!



2. Technical Description

2.1 General

This service manual serves the purpose of providing customer service technicians who already have the know-how required to repair dishwashers with specific information on the operating mode of the appliances indicated on the title page.

Descriptions and operating modes of components that are not new have therefore not been included in this edition.

See manual H7-410-02-01.

3. Installation and connection

3.1 Installing

In order to ensure that the lock functions perfectly and to prevent any leakages in the area of the door, the appliance must be perfectly aligned by means of the adjustable feet. In the case of integrated appliances, it is possible to adjust the middle adjustable foot at the back from the front. Attention! built-under and integrable appliances screw the appliance in an upward direction by means of the adjustable feet until the outer casing is at the same level as the working top.

3.2 Water connection

If the appliance is installed onto the drain with the standard length of hose, the max. permissible height above the floor is 90 cm. If the discharge hose is extended, a max. height of 80 cm is not to be exceeded.



3.3 Electric connection

Connect the appliance to a wall socket with earthing in accordance with regulations only. Please observe details on the identification plate (see technical data).

4. Description of operation

4.1 General

The appliances are equipped with an alternating rinse system and a glass protection system. The alternating rinse system is explained under the sub-title water diverter. The glass protection system comprises the prewashing program, the natural water valve and the heat exchanger.

4.2 Control panel design, depending on the model



LEDs = L0 to L6

Buttons Sa - Sc and S0 to S6

Main switch

Double-polar On/Off switch with a mechanical link to the door lock.

Pre-set time



The time-setting button enables the starting time to be postponed by up to 24 hours.

4.2.1 Display (2¹/₂-digit/3-digit 7-segment display)

The display comprises a 2½ -digit or 3-digit 7-segment display, which also enables program times of more than 99 minutes to be shown. The remaining time is newly calculated at the end of the heating positions. Should deviations result due to aqua sensor decisions, the water intake temperature, the quantity of dishes, etc., the remaining time for these phases will be adjusted. Time differences of up to 20 minutes may hence result at the end of the washing and clear-rinse cycles.

Remaining time display (2½-digit, 7-segment display)

While the program is operating, the indicator shows in minutes how much time is still likely to be required. Should the required time exceed 99 min., 2H is indicated on the display. If the time-setting has been set, the number will appear on the display with a small "h". The programm duration will automatically be adjusted in accordance with the type of dishes being washed, the quantity of dishes, the water temperature and the water pressure. On completion of the programm, the display will indicate "0".



4.2.2 Termination of a program (reset) (see instruction summary for button assignment)

Press the respective buttons for 3 seconds (for button allocation see the marking on the panel) with the appliance switched on. The display will indicate a "0" and the appliance will pump off for approx. one minute. The detergent box should then be closed so that the dispenser is also reset.

Soaking



The button for soaking can be pressed as a supplement to any program. When the button is pressed, an additional pre-rinse program with heating up to 55°C will take place in the lower basket, resulting in an extension of the program time of approx. 20 min. Recommended for washing various types of dishes: (top basket: sensitive dishes / bottom basket extremely dirty robust dishes).

Time reduction



The time reduction button can be pressed as a supplement to any program. When the button is pressed, the circulating time and the drying time, and therefore the washing and drying performance, are reduced (see circuit diagrams and consumption data).

4.3 Programs

Intensive 70°

This program comprises a pre-rinse at 50°, cleaning at 70°, two or three intermediate rinses, rinsing with a rinsing agent at 70°, and drying. Please ensure that rinsing is only carried out in the bottom basket until the required temperature has been reached.

Normal 65°

This program comprises cleaning at 65°, two intermediate rinses, rinsing with a rinsing agent at 69°, and drying. The aqua sensor is not activated in this program. Please ensure that rinsing is only carried out in the bottom basket until the required temperature has been reached.

ECO 50°

This program comprises cleaning at 50°, an intermediate rinse, rinsing with a rinsing agent at 66°, and drying. The aqua sensor is not activated in this program. Please ensure that rinsing is only carried out in the bottom basket until the required temperature has been reached.

Gentle 40°

This program comprises cleaning at 40°, an intermediate rinse, rinsing with a rinsing agent at 55°, and drying.

Rapid 35°

This program comprises cleaning at 35°, an intermediate rinse, rinsing with a rinsing agent at 55°, and no drying. The aqua sensor is not activated in this program.

Pre-wash

The program only comprises a cold rinse for the dishes. The aqua sensor is not activated in this program.

Auto 55° / 65° (depending on the model)

In the automatic program the aqua sensor not only decides on a change of water after the pre-rinse cycle; it also determines the washing temperature and the number of intermediaterinses. Depending on the aqua sensor decision, the program comprises:

- Cleaning at 50°, an intermediate rinse, rinsing with a rinsing agent at 65°, and drying.
- Cleaning at 65°, two intermediate rinses, rinsing with a rinsing agent at 65°, and drying.
- Pre-wash, cleaning at 55°, an intermediate rinse, rinsing with a rinsing agent at 65°, and drying.

4.4 Special functions

4.4.1 Adjustment of the water softener (see rapid guide for key configuration)

Keep the button (for configuration refer to the contro panel) pressed and switch on the appliance. The setting will be indicated in the number indicator. The setting rises once every time the button is pressed. Once the setting has reached 7, the indicator returns to 0. (Factory setting = 2)

When the appliance is switched off, the setting is stored. (See chapter 9.7.)

Recommendation

At each initial visit the setting of the water hardness level should be checked and, if necessary, adjusted. Do not apply the maxim "the lower the water hardness setting, the better".

4.4.2 Setting intensive drying, according to the model (See rapid guide for key configuration)

Keep the normal-button pressed and switch on the appliance. 0 will appear on the number indicator. By pressing the normal-button once again, 1 will appear on the display, meaning that the intensive drying program is switched on. If the appliance is switched off, the setting is stored. Activating intensive drying raises the temperature by 3 K in the rinse program with a rinsing agent.

4.4.3 Deactivating the refill clear rinse display, depending on the model (See rapid guide for key configuration)

Keep the button pressed and switch on the appliance. I:01 will appear in the numeric display. When the button is pressed again the display will indicate I:00 and the clear rinse refill display will have been deactivated.

I:00	= off
I:01	= on

If the appliance is switched off, the setting is stored. Deactivating the refill clear rinse display will raise the temperature for the clear rinse by 3K in order to achieve better drying results (see too 3 in 1 detergent recognition).



4.4.4 Combined detergents (3 in 1), according to the model (See rapid guide for key configuration)

The clear rinse temperature is raised by 3K (the same temperature as for intensive drying). This improves the drying result.

The 3 in 1 detergent recognition device will be activated when:

- The electronic system detects that the level of clear rinse agent is too low
- The clear rinse fill-up display is deactivated

The additional "Intensive drying" function can still be activated if wished; it will however have no effect on the clear rinse temperature. The maximum temperature rise is 3K.

4.4.5 Setting the clear rinse dispenser at the standard dose (See rapid guide for key configuration)

Keep the Sc-button pressed and switch on the appliance. 1 will appear on the number indicator. By pressing the Sc-button once again, 0 will appear on the display, meaning that the clear rinse fill-up display is switched on. During the setting procedure the Lc LED will blink. The setting is stored when the appliance is switched off.

4.4.6 Setting the buzzer (See rapid guide for key configuration)

Keep the S4-button pressed and switch on the appliance. The setting will be shown in the display. The setting rises once every time the S4-button is pressed. The volume can be set and adjusted from 0 = buzzer off and 3 = buzzer loud. During the setting procedure the S4 LED will blink. The setting is stored when the appliance is switched off.

4.5 General instructions on the controls

4.5.1 Tap closed

If the level is not reached within 6 minutes after commencement of filling up (fl is not activated), the program will be terminated (1 minute) Discharge ® Initial start-up) This process can be carried out three times in all. If the filling level has then not been reached, the filling valve will still be selected until the equipotential switch is activated.

The indication in the display will remain visible for 6 minutes after the program has started, until the level has been reached.

4.5.2 Equipotential switch is not activated

If during filling the equipotential switch (fl) is not activated, the filling valve will be selected until the safety level has been reached. The safety switch switches the detergent water pump on and the filling valve off. The filling valve is selected again when the safety switch has been reset. This results in alternating pumping and filling.

If the equipotential switch (f1) does not switch within 6 minutes, the program will be terminated; (1 minute pumping off). The filling step will then be re-started. This process can be carried out three times in all. This is hence an attempt to get the equipotential switch going again. If the filling level has then still not been reached, the filling valve will still be selected until the safety level has been reached again (filling / pumping / filling / pumping ...).

The indication in the display will remain visible for 6 minutes after the program has started, until the level has been reached.

4.5.3 Regeneration electronics system

On comparing the degree of water hardness set in the appliance, the electronics system determines what quantity of water is possible before the water softener is exhausted. The quantity of water used is calculated. Once the subsequent maximum number of rinses has been reached, recovery is carried out. The discharge behaviour of the regeneration electronics system can be seen in the description under initial operation / replacing the electronics unit.

4.5.4 Warm water recognition

If the water running in for the rinse with a rinsing agent has a temperature exceeding 45°C, the heat exchanger is not filled for the drying stage. In order to guarantee the difference in temperature essential for condensation, the temperature for the rinse with a rinsing agent is raised to 72°C, thus increasing the dishes own heat.

4.5.5 Memory Electronics System

The electronics system has a memory store which registers the last program selected. Should no other program be selected on program start-up, the program selected last will operate.

4.5.6 Power cut

The electronics system has a mains cut-off store which ensures that a rinsing program that has been commenced when a power failure occurs will be continued.

4.5.7 Sensors

All of the signals leaving the door switch, the level switch, the NTC sensor and the refill switches are recorded and evaluated by the microprocessor at the respective point in time.





4.5.8 Procedure for initial start-up - appliances with a heat exchanger

In the case of initial operation or electronics exchange, the following program procedure is to be observed. (Program scaler = 0!)







Start of the rinsing program



4.6 Listing the triacs (consumers and relays)

When a module is replaced due to a defective triac it is essential to check the component selected too.



IG 644. to 5 IG 657.2E IGS 644.0

A Drain valve heat exchanger

Observe EGB instructions!

- B Regeneration valve
- C Filling valve
- D Water diverter
- E Circulation pump
- F Dispenser actuator



Consumers such as valves, detergent and clear rinse dispensers (actuators) are activated by means of triacs (see photo). The circulation an the vacuation pump and the continuous flow heater are activated with relays.

IG 647.1

R5	Filling level
R6	Filling level
TY6	Drain valve heat exchanger
TY7	Dispenser actuator
TY8	Regeneration valve
TY9	Filling valve
TY11	Actuator top basket valve / Water diverter







Triacs

When a module is replaced due to a defective triac it is essential to check the component selected too.



Observe EGB instructions!

IG 6508.0E / IGVS 659.4

- A = Water diverter
- B = Filling valve
- C = Raw water valve
- D = Regeneration valve
- E = -----
- F = Drain-off valve
- G = Dispenser
- H = Circulation pump



Consumers

Consumers such as valves, detergent and clear rinse dispensers (actuators) are activated by means of triacs (see photo). The circulation an the vacuation pump and the continuous flow heater are activated with relays.

IG 647.2E IG 634.4

- H = Circulation pump
- A* = Filling level
- A = Dispenser
- A* = Water diverter
- B = Filling level
- C = Drain valve heat exchanger
- D = Regeneration valve
- E = Filling valve
- * = Triple triac





IGV 649.0	
IGVS 649.	

А	Drain-off valve
В	Regeneration valve
С	Filling valve
D	Aktuator water diverter
E	Dispenser actuator



Triacs

А	Filling valve
В	Drain valve heat exchanger
С	SICSYM activation
D	Raw water valve
E	Regeneration valve
F	Water diverter
G	Circulation pump
н	Dispenser actuator
I	Motor lock
Relay	
J	Rinse-water pump
К	Heater
L	PTC optosensor



When a module is replaced due to a defective triac it is essential to check the component selected too.

- A Salt/clear rinse fill-up
- B Option
- C Filling valve/Aqua-Stop
- D Regeneration valve
- E Dispenser actuator
- F Drain-off valve Heat exchanger
- G Option
- H Dispenser actuator
- I Dispenser
- J Drain-off valve Heat exchanger
- K Actuator



Controls F





5. Aqua sensor I and II

In addition to an infra-red LED, the aqua sensor II is also equipped with a green LED, which means that undissolved substances such as tea or spinach can also be recognised. In the automatic program, for example, the aqua sensor II has the following functions:

- Aqua sensor infra-red LED check in the pre-wash cycle Depending on the result of this check, the water is either exchanged (extremely dirty) or still used (hardly dirty).
- 2. Aqua sensor green LED check in the washing cycle Depending on the result of this check, a final temperature of 45°C (little soiling) or 50°C or 55°C (heavy soiling) is reached during the washing cycle. Should the aqua-sensor decide on a change of water during the pre-rinse cycle, the temperature for the washing cycle will be raised from 50°C to 55°C. Should the washing cycle be carried out at 50°C or 55°C, the filter will be rinsed through afterwards.
- 3. Aqua sensor green LED check in the first intermediate rinse Depending on the result of this check, an additional intermediate rinse will be carried out after the first intermediate rinse (heavy soiling) or only the filter will be rinsed through.



Calibrating the aqua-sensor II

An additional 400 ml of water is required for the calibration procedure in the first three rinsing cycles. This step is repeated after 20 rinses.

6. Fill system

6.1 Regeneration with heat exchanger

After the fill solenoid is opened, the water flows to the integrated inlet over the free flow line into the softener and then as softened water into the heat exchanger. After the regeneration chamber is filled the water flows through the overflow channel into the thredtle cup of the level sensor. The pressure build-up in the pressure socket causes the level switch to open the heat exchanger drain valve. The electronic determines the time between the open command of the fill solenoid and the closing of the level switch (f1). From this time the additional fill time of the fill solenoid is calculated.

The recirculation pump is turned on time-delayed, the drain valve stays open until the heat exchanger is fully emptied.

The water quantities of the wash cycles which have already run are registered by the electronic system and determine the timing for regenerating of the softener.

Before each regeneration step the electronic system checks whether the capacity of the softener is still sufficient for a complete normal program sequence. If not, another regeneration is done.

Regeneration and rinsing through the water softener is carried out in the washing cycle. If not, regeneration is repeated. During regeneration the regenerating valve on the softener is opened. The reservoired quantity of water flows across the valve into the salt container, is enriched with salt, and flows as brine through the softener into the heat exchanger. This is done in three cycles, each with a determined quantity of water.

- A Free flow line
- B Leaking water
- C Overflow channel
- D Heat exchanger
- E Level pressure switch f1
- F Switch lever
- G Safety pressure switch
- H Level air chamber
- I To pump casing
- J Float in the base pan
- K Salt container
- L Ion exchanger
- M Drain valve heat exchanger
- N Regeneration valve
- O Water inlet
- P Regeneration chamber
- Q Discharge hose ventilation valve





6.2 Intake of water with heat exchanger

After the fill solenoid is opened, the water flows to the integrated inlet over the free flow line into the regeneration chamber. When the regeneration chamber has been filled the water will flow through the overflow channel in the softening equipment and as soft water into the level sensor and the pump cavity.

Once the statistic level has been reached the signal transmitted by the equipotential pressure switch is picked up by the electronics system and the circulation pump is switched on again. The equipotential pressure switch is reset when the circulation pump commences operation. Dynamic filling continues until the equipotential switch is re-activated; the rinsing level will then have been reached.

The water quantities of the wash cycles which have already run are registered by the electronic and determine the timing for regenerating of the softener. Before each regeneration step the electronic system checks whether the capacity of the softener is still sufficient for a complete normal program sequence.

If not, regeneration is repeated. Regeneration and rinsing through the water softener is carried out in the washing cycle. During regeneration the regenerating valve on the softener is opened. The reservoired quantity of water flows across the valve into the salt container, is enriched with salt, and flows as brine through the softener into the pump cavity. This is done in three cycles, each with a determined quantity of water.

- A Free flow line
- B Leaking water
- C Regeneration chamber
- D Level pressure gauge
- E Level pressure switch f1
- F Switch lever
- G Safety pressure switch
- H Level air chamber
- I to pump casing
- J Float in the base pan
- K Salt container
- L Ion exchanger
- M Regeneration valve
- N Water inlet
- O from discharge pump
- P to discharge hose
- Q Discharge hose ventilation valve



Filling procedure for appliances with a heat exchanger

The electronic system determines the time between the open command of the fill solenoid and the closing of the level switch (f1). From this time the additional fill time of the fill solenoid is calculated. For every initial fill-up in a rinsing program, 200ml more water than the standard water volume will be filled in.

On initial intake of water for the washing program, this volume of water is used to balance the water which is lost when the dry dishes are wet. This ensures that the circulation pump runs concentrically and water is saved when the dishwasher is filled up again. The recirculation pump is turned on time-delayed, the drain valve stays open until the heat exchanger is fully emptied.



t1=refill time calculated, t2=drain-off valve stopping performance time, t3=circulation pump switch-on delay

Filling procedure for appliances without a heat exchanger

After the statical level has been reached the module will be selected by the equipotential switch, will move into the next position and the circulation pump will be switched on again. The equipotential pressure switch is reset when the circulation pump commences operation. Dynamic filling continues until the equipotential switch is re-activated; the rinsing level will then have been reached.





7. Functions and components

7.1 Safety function

Should functional defects in the dishwasher control system or in the structural elements occur, resulting in an over-filling of the machine, the valve combination will be closed by means of the safety system, thus blocking off the water supply. The discharge pump is switched on by means of the safety level switch. Pumping will continue until the filling level has once again been reached. Any leaks occurring within the machine are collected in the base pan. Leaks in the supply hose are guided to the base pan by means of the leakage water hose.

Once a set level in the base pan has been reached, the float activates the safety level switch by means of a switch lever, which then switches off the filling and safety valve electrically. At the same time the discharge pump is switched on, the rinse water is removed from the rinsing container, and the discharge pump switches onto continuous operation.

7.1.1 Visual clear rinse fill-up sensor

The visual clear rinse fill-up sensor comprises a transmission and a receiving diode.

The transmission diode sends a light beam to the receiving diode via a prism. If the reservoir is filled up, the light beam will be dispersed in the prism. The receiver signal will therefore be weaker than the sender signal.

- A Transmission diode
- B Receiver diode
- C Prism

If the reservoir is empty the light beam will be reflected in the prism. The receiver signal is the same as the sender signal.

The module will evaluate the signal received and will activate the fillup LED.

7.1.2 Salt and clear rinse agent display

The reservoir is equipped with a float which has an integrated permanent magnet. This uses the magnetic field to activate a reed switch which is attached to the outside of the reservoir. This switch in turn activates the lamps of the fill-up displays in the control panel.

- A = Permanent magnet
- B = Reed switch open
- C = Reed switch closed







7.2 Thermohydraulic system (actuator)

The thermohydraulic system comprises a metal cylinder with a push rod. The cylinder is filled with a substance which greatly expands when heated. A PTC serves as a source of heat (Postive Temperature Coefficient), and this makes direct contact with the metal cylinder. Subsequent to switch-off of the heat source, a strong compression spring returns the push rod back to its original position.

Construction



After voltage has been applied to the PTC, it heats up and transmits the heat to the metal cylinder which is filled with wax. The wax expands and presses the push rod out of the cylinder to the outside. The push rod transmits the mechanical movement to the release mechanism of the detergent and clear rinse agent dispensers. If the source of heat is switched off the volume of wax will be reduced on cooling down. The compression spring returns the push rod back to its original position.

The release period is approx. 2 min.; the resetting time is approx. 3 min.

Technical Data

Nominal voltage	110 - 240 V
Frequency	50/60 Hz
Resistance	0.5 - 1.5 k Ω





7.3 Regeneration, drain-off and raw water valves

The regeneration valve and the drain-off valve are located on the softening equipment. When the regeneration valve is activated the volume of water stored in the regeneration chamber is lead through the softening equipment. When the drain-off valve is activated the volume of water stored in the heat exchanger is lead through the softening equipment to the rinsing cavity.

The raw water valve is located on the rear on the softening unit and is used for adding hard water.

The raw water and the soft water valves are activated by the electronic unit which calculates how frequently and for how long the valve needs to be activated. This ensures a constant degree of water hardness of approx. 5° dH. For this reason it is vital to set the range of hardness precisely.

When the valve is activated (open) the raw water is lead through the softening equipment and is softened. If the valve is not activated (closed), the entry to the softening equipment is closed and the raw water flows direct from the water inlet to the heat exchanger.



- A = Softening unit
- B = Regeneration valve
- C = Drain valve heat exchanger
- D = Raw water valve

Technical Data

Nominal voltage	230-240V
Frequence	50 Hz
Resistance	2.45 Ω

7.3.1 Glass protection (Aqua-Mix)

By means of a targeted control of the degree of water hardness, the effect of aggressive soft water on the dishes is avoided. Depending on the degree of hardness set (8 settings, from 0 to 7, setting on the front panel) and by means of a "bypass," fresh tap water is mixed with the softened rinse water, so that the degree of water hardness in the appliance is always at least 5°dH. The aqua-mix valve is activated by the electronics system and is located on the water softening device. In the case of naturally soft water, which has no negative effects on glass, the softening can be set onto "0", and the glass protection technology will then not be activated.

Change in degree of hardness of the water in the appliance during several rinses



7.3.2 Alternating pumping procedure

In order to achieve a better cleaning of the fine sieve, the water is circulated and pumped out alternately 3 times for 5 sec. This means that water flows through the sieve in both directions. (Attention: noises).

7.4 Temperature safety system (NTC)

The temperature cut-out switch (>85°C)) is combined with the NTC sensor. In the event of a fault the heater will be switched off when the water temperature reaches 85°C (clocked).

Temperature °C	Resistance in $\mathbf{k}\Omega$	Tolerance +/- °C
25	48.4	7.9
30	38.5	7.1
50	16.5	6.2
60	11.0	5.6
65	9.1	5.5





Temperature cut-out switch IG 634.4

The temperature cut-out switch (>85°C) is combined with the temperature cut-out switch (65°C). In the event of a fault the heater will be switched off when the water temperature reaches 85°C (clocked).



7.5 Water softener

- 1. Screw off the outer door, the base cover, the L-strap and the side panels.
- 2. Detach the traction rope from the hinge lever and unscrew the screws between the base pan and the hinges.
- 3. Unscrew the rinse cavity on the back wall of the base pan.
- 4. Disconnect the door wiring harness at the plug connection in the base pan. Remove the electrical connections from the regeneration and drain valves.
- 5. Screw off the fastening nut between the salt box and the rinsing vessel.
- 6. Suction the brine out of the reservoir with a suction syringe.
- 7. Lay the device on its rear side and carefully pull out the base pan. Release the lock from the level sensor case and the water softening unit.
- 8. Separate the circulation pump with the rubber bearing from the base pan and pull the base pan off further until the softening unit can be removed from the plug connections on the water supply and the level sensor casing.
- 9. Remove the Reed switch.

The following must be carried out before the softening unit is installed:

- 1. Put the seal onto the filler neck of the salt box.
- 2. Insert the sealing rings into the plug connections.
- 3. Put the rubber cap onto the bearing connection in the base pan for the pump cavity.
- 4. Insert the switch rod for activating the security level switch.
- 5. Put the rubber mounting onto the circulation pump.



Salt container - filling capacity

Fine-grained salt	approx.	2.0	kg
Coarse-grained salt	approx.	1.5	kg
Salt tablets	approx.	0.7	kg

7.6 Aqua Stop System

The valve system comprises two series-connected, parallelactivated electrical solenoid valves, the filling valve and the safety valve. The safety function can be released with the safety level chamber or electrically by means of the float in the base pan. The flow of water is then stopped mechanically. An electric solenoid valve which is enclosed in a casing is attached to the water tap. From the valve the water supply hose is lead to the integrated water intake device and the electric trip line for the solenoid valve is lead to the base pan through a leak water hose attached to the valve casing in the power room.

Technical Data

Nominal voltage	230240 V
Frequency	50 Hz
Resistance	2 kΩ
Flow rate	2.75 l/min
Water pressure	0.5 - 10 bar



7.6.1 Disassembly

- 1. Open the casing and remove the supply hose.
- 2. Cut through the electric connection cables.
- 3. Strip the ends of the wires; push shrinkdown plastic tubing over the cable and connect the electric cables with the insulating bushing (1).
- 4. After mounting heat up the connectors until the shrinking process has commenced and the hot-melt adhesive squeezes out of the ends of the connectors (2).
- 5. Push the shrinkdown plastic tubing over the connectors and warm it up too until the shrinking procedure has been completed (3).





7.7 Flow sensor

The flow sensor is integrated in the water intake device. It registers the volume of water flowing in.

It comprises a casing, an impeller wheel with a permanent magnet and a circuit board with a Reed switch.

The water sets the impeller wheel in motion. The magnet attached to the impeller wheel switches a reed switch twice for every revolution (north/ south-south/north).

The impulses generated are counted by the electronic system. They cannot be measured.

Technical Data:

Hydraulic data:		
Minimal flow rate:	0.8 l/m	
Maximum flow rate:	4.0 l/m	
Nominal flow rate:	2.5 l/m	-
<i>Electrical data:</i> Output signal:	Square signal	
Switching current:	max. 5 mA	A = Water intake
Nominal output signal	at 2.5 l/min	B = Water discharge
Flow rate:	208 impulses / litre	C = Connector plug





It is vital to ensure that the direction of flow is correct on installation. An arrow on the flow sensor indicates the direction of flow.

8. Accessing individual components

8.1 Hinge

- 1. Unscrew the outer door, the base, the angle plate, and the side walls.
- 2. Detach the traction rope from the hinge lever.
- 3. Unscrew the hinge lever from the inner door.
- 4. Unscrew the hinge plate from the cavity frame.
- 5. Unscrew the fixing screw from between the hinge and the base pan.
- 6. Lift the hinge plate clear of the frame; and pull the hinge upwards.
- 7. Remove the spring compressor.
- A Hinge plate
- B Hinge lever
- C Bearing bush
- D Spring compressor
- E Traction rope
- F Traction spring
- G Retaining piece
- H Supporting lobes

Two-piece hinge bearing bush

Open the bearing brush, disengage the retaining piece using screwdriver (see sketch)

One-piece hinge bearing bush

Open the bearing bush, bend out the supporting lobes using a screwdriver. The bearing bush also needs to be renewed after it has been removed.

8.2 Dispensing device

The triggering mechanism is controlled by an actuator. When first triggered, the cover of the detergent dispenser is opened, and at the same time the trigger catch snaps into the socket on the rinsing agent lever, enabling a dosing plunger for the rinsing agent to be raised next time the actuator is triggered.



Note!

To remove the dispenser, leave the upper basket in the appliance, close the door, then press the unlatched dispenser inwards.

Sharp edges! Use protective gloves.

Before installing the dispenser, align the holding flaps to the middle to ensure that all supporting cams snap in securely. Before installing, lubricate the seal using cleaning agent.





Technical Data

Rinsing agent fill quantity	120 ml
Setting 1-6	each 1 ml
Cleaning agent capacity max.	45 g

For further technical data, see the actuator.

Disassembly

- 1. Screw off the outer door.
- 2. Disconnect the electrical connections.
- 3. Use a screwdriver to lift the holding flaps that are stamped out of the inner door clear of the supporting cams.
- Note! To remove the dispenser, leave the upper basket in the appliance, close the door, then press the unlatched dispenser inwards. Sharp edges! Use protective gloves.
- 4. Before installing the dispenser, align the holding flaps to the middle to ensure that all supporting cams snap in securely.
- 5. Before installing, lubricate the seal using cleaning agent.

8.3 Detergent water pump

Remove the base cover and the base sheet. The detergent water pump is engaged in the pump cavity on the front left-hand side. In order to remove the pump the lever (1) must be disengaged. The pump must then be turned towards the front (2). After approximately a quarter of a turn it will be possible to pull the pump off (3).

Technical Data

Nominal voltage	230-240 V
Frequence	50 Hz
Resistance	110 - 260 Ω
Delivery height	0.9 m
Delivery performance	10 l/min

A B F E D C

- A Dosing plunger D Float magnet
 - E Dry reed contact (optional)
- B Socket C Actuator
- F optical sensor (optional)





In order to reduce running noises, the pump has soft bearings between the pump cavity and the discharge hose.

In order to achieve a better cleaning of the fine sieve, the water is circulated and pumped out alternately 3 times for 5 sec. This means that water flows through the sieve in both directions (alternating pumps).

After the drying phase the pump will be activated alternately 3 times for 5 seconds and there will be a break of 5 sec. (sputter pumping). This step is required to deaerate the pump.

Disassembly

- 1. Remove the base cover and the base sheet. The detergent water pump is engaged in the pump cavity on the front.
- 2. Cut through the link (1) on the catch (2).
- 3. Press the catch (2) over the locking device (3) and turn the pump downwards at the same time.
- 4. After approximately a quarter of a turn (4) it will be possible to pull the pump off (5).

8.4 Continuous flow heater

The continuous flow heater is installed in the spray arms water circuit. When rinse water flows through, a rubber membrane located on a flange is activated that switches the heater's safety pressure switch. If the pressure falls, the heating is turned off. The heating position is overridden, thus avoiding the dry appliance being heated.

Disassembly

- 1. Unscrew the outer door, the base plate, the angle plate, and the side walls.
- 2. Detach the traction rope from the hinge levers.
- 3. Unscrew the screws between the base pan and the hinges.
- 4. Unscrew the rinse cavity on the back wall of the base pan.
- 5. Disconnect the door wiring harness at the plug connection in the base pan.
- 6. Lay the device on its rear side and carefully pull out the base pan. Release the lock from the level sensor case and the water softening unit.
- 7. Separate the circulation pump with the rubber bearing from the base pan.
- 8. Open the base pan enough for the continuous flow heater to be unscrewed from the pump cavity. Unscrew the continuous flow heater.
- 9. Release the lock on the pump cavity and lift the continuous flow pump away from the pump cavity/ circulation pump plug connections.



- A Klixon / NTC ; 85°C Safety switc
- B Membrane
- C Heater
- D Safetey pressure switch
- E From the circulation pump
- F To the lower spray arm
- G To the upper spray arm



Technical Data

Nominal voltage	230-240 V
Frequence	50 Hz
Output	2150 W
Resistance	22 approx.Ω

8.5 Equipotential system with a safety function

Should functional defects in the dishwasher control system or in the structural elements occur, resulting in an over-filling of the machine, the valve combination will be closed by means of the safety system, thus blocking off the water supply.

The discharge pump is switched on by means of the safety level switch. Pumping will continue until the filling level has once again been reached.

Any leaks occurring within the machine are collected in the base pan. Leaks in the supply hose are guided to the base pan by means of the leakage water hose.

Once a set level in the base pan has been reached, the float activates the safety level switch by means of a switch lever, which then switches off the filling and safety valve electrically.

At the same time the discharge pump is switched on, the rinse water is removed from the rinsing container, and the discharge pump switches onto continuous operation.



- A Level switch
- B Safety equipotential switch
- C Float for safety level
- D To pump cavity
- E Float
- G Air chamber
- H Throttle cup for appliances with heat exchanger
- I From overflow channel
- J Switch lever
- K Level pressure gauge
- F from the discharge for appliances with heat exchanger from the softener for appliances without a heat exchanger

8.6 Sieve system

To prevent dirt particles from getting into the rinsing circuit, the coarse sieve cylinder must be engaged tightly with the pump cavity (observe marking).



Fourfold sieve system

- A Coarse sieve
- C Micro-fine sieve cylinder
- Threefold sieve system B Flat sieve
- D Fine sieve cylinder

The sieve system comprises a fourfold filter system (a course filter, fine sieve cylinder, a fine flat sieve and a micro-fine sieve). The pump cavity, where the micro-fine sieve is located, is covered by the flat fine sieve. The flat fine sieve and the combined coarse and fine sieve cylinder are attached to the bottom of the pump cavity by means of a bayonet catch.

Sieve system

- A Lower spray arm
- B Feed pipe to upper spray arm
- C Rinse cavity
- D Pump cavity
- E Micro-fine sieve
- G Fine sieve
- H Coarse sieve
- D Pump cavity
- F Flat sieve
- I Hinged lid (optional)





R

С

8.7 Rotary spray system

The rotary spray system consists of three spray levels, the lower and upper spray arm and a top spray.

The water supply to the upper spray arm and the top spray is brought through the inlet pipe attached to the inside of the container rear wall. This pipe is connected by a direct connection with the flow heater under the pump cavity at one of its two outlets.

The upper spray arm is directly fastened with its inlet pipe to the upper basket. The connection to the inlet pipe is through a variable coupling. The water entry is adapted to the spray arm using this variable coupling. The connection to the inlet pipe is through a variable coupling.

The lower spray arm with its bearing is connected directly through the pump cavity at the second outlet of the flow heater. The valve for the upper basket wash cycle is located in this outlet.



- A Top spray В
- Pump cavity
- Coupling C Inlet pipe
- Е Lower spray arm
- F Upper spray arm

8.8 Rinsing and pump system

The circulating pump and the discharge pump as well as the continuous flow heater are connected to the pump cavity by means of plug connections. The continuous flow heater is also screwed to the pump cavity in such a manner that no pressure can occur. The sieve system comprises a fourfold filter system (a course filter, fine sieve cylinder, a fine flat sieve and a micro-fine sieve). The pump cavity, where the micro-fine sieve is located, is covered by the flat fine sieve. The flat fine sieve and the combined coarse and fine sieve cylinder are attached to the bottom of the pump cavity by means of a bayonet catch. The rinse water which flows into the pump cavity is sucked up by the circulation pump and forced into the continuous flow heater.

If the pressure is sufficient, the push button for the heater is actuated by means of the flange membrane. A series-connected thermostat with a cut-off temperature of 85°C prevents overheating. Overheating is prevented by means of a temperature control which is connected in series and switches off at 65°C. This temperature control is combined with an NTC sensing element (negative temperature coefficient), com-



prising one component part. The surface of the sensing element makes direct contact with the rinse water. The aqua sensor is positioned at the exit of the continuous flow heater and has its sensor in the flow of the rinse water in order to determine how dirty the rinse water is. The direct fitting of the discharge pump onto the pump cavity means that the impeller and the non-return flap are accessible when the cover in the rinse cavity is removed.

8.9 Door seal

The new seal must be fitted before it is installed:

- The length of the seal must fit around the circumference of the cavity.
- Cut the ends of the seal at a 45° angle.
- Allow the seal to rest 40 mm on the base of the cavity. (splashproof stop for the bottom corners).
- Press the seal in evenly without any kinks.





Prior to installation make sure that the sealing lip is in the correct position; it must point towards the centre of the dishwasher cavity otherwise there will be leaks around the door.



8.10 Door spring

The weight of the front of the unit is balanced with the door springs.

The door springs are located on the right and on the left side below the base pan. The traction force is transmitted to the door hinge with a cable drawn over a deflection pulley. With the adjusting screw supplied (for built-in appliances only) the traction force of the spring can be increased with the deflection pulley.

For very heavy unit doors (e.g.: marble) the traction force of the springs which are installed as a standard and the maximum initial load of the spring clamp will not be sufficient.

In this case stronger door springs (see chart) can be used.

If the unit doors are extremely lightweight, the door springs may also be replaced with lighter ones.

Only pairs of door springs may be replaced!

Maximum unit door weight is about 10.5 kg





The circulation pump is operated by means of a single-phase alternating current motor.

Switching the two motor windings with the motor capacitor is either activated by an electronic unit or a relay on the motor connection or by the module. During the start-up phase the two windings (in series with the capacitor) are parallel to one another direct on the power supply and generate an extremely powerful starting force.

After switch-over the two windings will be in series (behind one another), i.e. the two windings are each supplied with half of the power supply. The motor will then be optimally adjusted to the pump (in operation) and, besides requiring very little power - for label AAA – it will also make very little noise, since the windings are supplied with half of the power supply in operation.

Technical	Data
-----------	------

Nominal voltage	230-240 V
Frequence	50 Hz
Resistance	Ha ca.80Ω
	HI 1 85 approx. Ω
	HI 2 13 approx.Ω
Delivery height	3.1m



- B Spring clamp (deflection pulley)
- C Traction rope

Disassembly

- 1. Remove the side panels and the base sheet.
- 2. Remove the 2 screws (at the front and the rear) connecting the stainless steel shell and the plastic base pan on the right-hand side.
- 3. Lift up the shell and secure it with an object which is approx. 4 cm thick.
- 4. The circulation pump is engaged in the pump case. Use a screwdriver to press the catch on the righthand side of the circulation pump to the inside and turn the pump clockwise. You will then be able to remove the pump.

Assembly is carried out in reverse order. The gasket must be lubricated with detergent prior to installation.

Attention! When a motor is replaced the spacer ring which is placed on the motor shaft must be used again for the new motor as the impeller wheel with otherwise become sluggish or blocked!



Operation: Start: 2/32/3 Ha Ha 2 (1)¢ С С 4 Hi Hi CB CB E F 1

Assembly is carried out in reverse order. The gasket must be lubricated with detergent prior to installation.



Circuit diagram

8.12 Water diverter

The water diverter is responsible for alternating rinses (the dishwasher rinses the top basket and the bottom basket in alternation, bottom basket 30 sec. / top basket 50 sec., the switchover takes approx. 6 sec.). It comprises a synchronous motor with power transmission, a cam disk, a microswitch and a slide. The synchronous motor is activated with a triac. The synchronous motor drives the transmission and hence also the cam disk and the slide. The slide closes the respective water channel to the spraying arms. The sealing washer has two openings of different sizes. The small opening reduces the flow volume for the top basket. The control system receives information on the position of the slide from the microswitch, which is activated by the cam disk.

The water diverter is integrated in the continuous flow heater and can only be replaced as a full unit.

Technical Data

Nominal voltage	230-240 V (synchronous motor)
Frequency	50/60 Hz
Resistance	9.3 k approx.Ω



9. Operation and function

9.1 IGV 659.2 and IGV 659.3 operation

The electronics system comprises two modules installed in a cabinet. The control / output modul is connected to the operating /indicating module by means of a flat cable.



9.1.1 Function

LEDs

- Program selection
- 2 1/2 digit display
- Clear rinse fill-up display
- Salt refill indicator

9.1.2 Buttons / program selection

Pre-set time (ZVW)

The time-setting button enables the starting time to be postponed by up to 19 hours (setting between 0h - 19h). The button must be pressed for at least one second.

Intensive 70°

The program comprises a pre-rinse at 50°, a washing cycle at 70°, two intermediate rinses, a clear rinse at 67 °C and a drying cycle.

Auto 55°/65°

Depending on the aqua sensor decision, the program comprises:

- Cleaning at 50°, an intermediate rinse, rinsing with a rinsing agent at 65°, and drying.
- Cleaning at 65°, two intermediate rinses, rinsing with a rinsing agent at 65°, and drying.
- Pre-wash, cleaning at 55°, an intermediate rinse, rinsing with a rinsing agent at 65°, and drying.

ECO 50°

This program comprises cleaning at 50°, an intermediate rinse, rinsing with a rinsing agent at 65°, and drying.



Rapid 35°

This program comprises cleaning at 35° , an intermediate rinse, rinsing with a rinsing agent at 55° , and no drying.

Pre-wash

The program only comprises a cold rinse for the dishes.

9.1.3 Program-reset

With the appliance switched on, press the S2-button and the S4-button simultaneously for 3 sec. The water will be pumped off for approx. one minute. The cleaning agent compartment should then be closed, so that the dispensing device is also reset.

9.2 IGV 657.1 and IGV 644.4 operation



Pre-set time (ZVW)

The time-setting button enables the starting time to be postponed by up to 19 hours (setting between 0h - 19h). The button must be pressed for at least one second.

Display

The display consists of a 2½ digit, 7 segment display, The display indicates the remaining time in hours and minutes.

The remaining duration is recalculated at the end of the heating positions. If deviations arise as a result of aqua sensor decisions, incoming water temperature, or volume of dishes etc., the remaining duration displayed is corrected during these positions. Time differences of up to 50 minutes may occur. When a program is started the remaining time which the program required the last time it was used is indicated.

9.3 IGV 647.1 and IGV 647.2 operation

The electronics system comprises two modules installed in a cabinet. The control / output modul is connected to the operating /indicating module by means of a flat cable.



9.4 IGV 634.4 operation

The electronics system comprises two modules installed in a cabinet. The control / output modul is connected to the operating /indicating module by means of a flat cable.





9.5 IGV 659.4 and IGV 6508.0E operation



9.5.1 Pushbuttons/ supplementary functions (Sa – Sc)

Main switch

Double-polar On/Off switch with wiping contact.

Soaking (optional)

The button for soaking can be pressed as a supplement to any program. When the button is pressed, an additional pre-rinse program with heating up to 55°C will take place in the lower basket, resulting in an extension of the program time of approx. 20 min. Recommended for washing various types of dishes (top basket: sensitive dishes / bottom basket extremely dirty robust dishes).

Top basket (optional)

The button for the top basket must be pressed if only the top basket is to be rinsed. The water diverter will be positioned for rinsing the top basket during the entire rinsing process. The program sequence will however be maintained as for alternating rinses.

Time reduction (optional)

The time reduction button can be pressed as a supplement to any program. When the button is pressed, the circulating time and the drying time, and therefore the washing and drying performance, are reduced.

Bottom basket (optional)

The button for the bottom basket must be pressed if only the bottom basket is to be rinsed. The water diverter will be positioned for rinsing the bottom basket during the entire rinsing process. The program sequence will however be maintained as for alternating rinses.

Pre-set time (ZVW)

The time-setting button enables the starting time to be postponed by up to 19 hours.

9.6 IGV 657.1 and IGV 644.4 operation



Pre-set time (ZVW)

The time-setting button enables the starting time to be postponed by up to 19 hours (setting between 0h - 19h). The button must be pressed for at least one second.

Display

The display consists of a $2\frac{1}{2}$ digit, 7 segment display, The display indicates the remaining time in hours and minutes.

The remaining duration is recalculated at the end of the heating positions. If deviations arise as a result of aqua sensor decisions, incoming water temperature, or volume of dishes etc., the remaining duration displayed is corrected during these positions. Time differences of up to 50 minutes may occur. When a program is started the remaining time which the program required the last time it was used is indicated.



9.7 IG 634.4 special functions

Setting the hardness range

Keep the S3-button pressed and switch on the appliance. The LED for fill-up salt will blink. The fault is indicated by means of the program LEDs (see chart "Setting the hardness range"). The setting will go up one step every time the S3 button is pressed. If the appliance is switched off, the setting is stored.

9.8 IGV 659. from .4, IGVS 659. from .3 and IG 6508.0E special functions

Setting the hardness range

Keep the S3-button pressed and switch on the appliance. The setting will be indicated in the number indicator. The setting rises once every time the S3-button is pressed. Once the setting has reached "H7", the indicator returns to "H0". During the setting procedure the L3 LED will blink. The setting is stored when the appliance is switched off (see chart for setting the hardness range).

9.9 IG 644.4 special functions

Setting the hardness range

Keep the S5-button pressed and switch on the appliance. The setting will be indicated in the number indicator. The setting rises once every time the S5-button is pressed.

Once the setting has reached "H:07", the indicator returns to "H:00". During the setting procedure the L5 LED will blink. The setting is stored when the appliance is switched off (see chart for setting the hardness range).

Hardness range chart

°dH	°fH	°Clarke	mmol / I		Setting (display)	
				IG 647	IGV 659 from 4 IGVS 659 from 3 IG 6508.0E	IG 644.4 IG 644.5 IGS 644.0
0 - 3	0 - 6	0 -4	0 - 0.6	0	HO	H:00
4 - 6	7 - 11	5 - 8	0.7 - 1.1	1	H1	H:01
7 - 9	12 - 16	9 -11	1.2 - 1.6	2	H2	H:02
10 - 12	17 - 21	12 - 15	1.7 - 2.1	3	H3	H:03
13 - 16	22 - 29	16 - 20	2.2 - 2.9	4	H4	H:04
17 - 21	30 - 37	21 - 26	3.0 - 3.7	5	H5	H:05
22 - 30	38 - 54	27 - 38	3.8 - 5.4	6	H6	H:06
31 - 50	55 - 89	39 - 82	5.5 - 8.9	7	H7	H:07
	Series se	tting		2	H4	H:04

10. Remedying faults for all of the series 630 – 634 appliances

Should your dishwasher develop a fault, please check up on the following before contacting our customer service (*see, too, the relevant section in the instructions for use)

10.1 Smell

Customer information	Cause	Remedy
Burnt Smell	Connection cable improperly extended	Advise the customer; observe instructions in the user manual.
	Socket burned (due to poor contact)	 Consult the customer; the socket and the connection cable must be replaced.
	Winding damage or faulty insulation on the consumers	 Check the consumers (test program) and check according to flow diagram. Observe safety instructions.
	 Poor electric connection or leakage path on electrical components (inspect edge connectors) 	 Rectify leakage paths and contact resistances; observe leaks, high-current cables may not be extended.
Smell of chemicals	Detergent or clear rinse	 Advise the customer. The customer specifies on chemicals; possibly replace the product (with lemon aroma) or recommend an air freshener.
	 Binding agent of the noise reduction devices (fleece, insulation mats) 	Explain about new odour to customer.
	Steaming of electrical components or circuit boards.	Advise the customer
Smell of rotting	Permanent insufficient dispensing of detergent	Advise the customer; observe dosing instructions.
	 Deposits under the cover of the sieve, in the pump cavity or in the area of the sealing. The smell comes from the sink drainpipe (the siphon may be extremely soiled or evacuated) 	 Advise the customer to clean the machine or use a more powerful program. Possibly refer customer to a plumber.
	Dishwasher not properly connected to the siphon.	 Connect properly if possible or refer customer to a plumber if necessary.

10.2 Noises

Customer information	Cause	Remedy
Knocking noises in the pipes when water is being taken in	 Improper installation or cross section of the water pipes (usually only occurs with appliances fitted with an aqua-stop valve since the valve is connected direct onto the tap). 	 Advise the customer and refer him to a plumber (have a pressure reducer installed).
Clattering noises during the rinsing cycle	Spray arm knocking on the dishes	Advise the customer; dishwasher not properly loaded.
Alternating noises in the washing program	 Alternating rinsing technology (55 sec. top basket rinsing, 5 sec. to change, 60 sec. for the bottom basket in cycles) of the water diverter. 	• Advise the customer; load the dishwasher, possibly install a bottom spray arm with a larger jet stream (see "Water diverter" on page 38).
	 Alternating pumping (detergent water pump and circulation pump are activated alternately) 	Advise the customer

The next few charts deal with food or sandy residues which may impair the rinsing results. These are:

- Lime deposits (analyse with 10% hydrochloric acid in the diagnosis suitcase)
- Starch deposits (analyse with iodine solution in the diagnosis suitcase)
- Water-soluble or regenerating salt (analyse with distilled water in the diagnosis suitcase)
- Discolouration / colour deposits (e.g. tea, tomato juice, coffee, lipstick, etc.) (analyse with sodium hypochlorite bleach in the diagnosis suitcase)
- Residual detergent (analyse with distilled water in the diagnosis suitcase)
- Water-insoluble deposits / damage to dishes rinsed

10.3 Food or sandy deposits

Customer information	Cause	Remedy
Residual food or sandy deposits	 Coarse, micro or fine sieve clogged Sieve not engaged in the pump cavity 	Advise the customer; sieve and care. Clean parts if necessary, instruct customer on inserting the proper sieve
	 Spray arm jets, top spraying nozzle blocked 	Cleaning
	 Spray arm bearing stiff (dirt in the region of the bearing) 	Advise customer; cleaning
	 Foreign matter in the region of the discharge hose connections to the water inlet (discharge channel) Trap in the pump cavity partially blocked 	Connect the discharge hose properly
	Discharge hose bent	
	 No detergent dispensing or insufficient dispensing, wrong program selected 	• Advise the customer; observe the dosing instructions of the detergent, use program with a higher temperature; check the dispenser, see "Dispensing device" on page 29.
	 Dishes not arranged properly (large dishes, e.g. pots, in the bottom basket), avoid contact points, rows of spikes bent 	 Advise customer, align the rows of spikes (see instruction manual)
	Spray arm blocked by dishes or cutlery	Advise the customer
Clattering noises during rinsing cycle	Spray arm knocking on the dishes	Advise the customer; dishwasher not properly loaded.

Customer information	Cause	Remedy
Residual food or sandy deposits	 Snorting noises; circulation pump does not run smoothly, too little water in the dishwasher (attention in the case of alternating rinse technology) 	Check the functioning of the equipotential transducer (carry out a filling procedure)
	 Non-return valve leaking; dirty water flows back into the dishwasher 	• Remove the non-return valve, check the valve and its position for dirt and clean if necessary.
	Dishwasher does not circulate	Check the circulation pump, see "Circulation pump (SICASYM)" on page 36.
	Dishwasher does not heat up	• Check the heating circuit in accordance with the circuit documents; observe the circuit breaker on the continuous flow heater (see"Continuous flow heater" on page 31) (the circulation pump can only build up sufficient pressure if there is enough water in the dishwasher).
in the top basket	 Dishwasher only rinses dishes in the bottom basket 	• Obstruction of the rinsing cycle of the top basket; it is essential to observe that in some steps in the program, rinsing will only take place in the bottom basket. Check with the help of the customer service program and diagnosis aids.

10.4 Lime deposits

Customer information	Cause	Remedy	
Lime deposits on the dishes	 Hardness level incorrectly set or raw water hardness > 50°dH Check the residual heat in the washing and clear rinse cycles 	 Set the hardness level; advise the customer; use detergents containing phosphate 	
	Does not regenerate	 Set the regenerating position and carry out a function check (observe the emptying of the regeneration chamber) Check the regeneration valve carefully (mechanical - valve stern; electrical – selection / coil) 	
	 Valve for raw water does not open -> filling with raw water only 	 Check the raw water valve (mechanical - valve stern; electrical – selection / coil) 	

10.5 Starch deposits

Customer information	Cause	Remedy	
Lime deposits on the dishe, starch	Insufficient detergent (unsuitable detergent)	Advise the customer; use a detergent with enzymes	
	Wrong program selected (program selected too weak)	Advise the customer; select the right program,	
	 Dishwasher connected to a warm water supply; inlet water temperature too high 	Check the warm water connection (target: less than 60°C), advise the customer, if necessary connect the dishwasher to a cold water supply	

10.6 Water-soluble or regeneration salt residue on the dishes

Customer information	Cause	Remedy
Water-soluble residue	Regeneration salt on the dishes	Advise the customer, rectify leak
	 Salt box top not watertight (check the screw fitting, Regeneration chamber slowly emptied) 	Check the valve and its seating
	 Regeneration valve is leaking (reg.chamber slowly emptied) 	Electrical check on the basis of circuit documents
	Regeneration valve permanently activated	See damage to dishes, page 53
	Commencing cloudiness of glass: can only apparently be	See residual food
	wiped off	Advise the customer.
	Detergent water carried over	
	Combined product	

10.7 Discolouration / residual colour

Customer information	Cause	Remedy	
Residual colour	Too little detergent used	Advise customer, increase the quantity of detergent	
	Plastic becomes discoloured, for example by tomato deposits, tea, coffee, etc.	Use a detergent with chlorine bleaching. If the dishwasher becomes discoloured recommend a cleaning agent for the machine	
	Detergent very lumpy, cleaning effect and dissolving properties diminish	Advise the customer, store the detergent in a sealed container in a dry place	
	 Program selected not powerful enough (if the program is too short and the temperature too low there will not be sufficient contact with the oxidation bleach) 	Advise the customer; use a more powerful program	
Rainbow-coloured smearing	Silicate deposits on glasses only (cannot be removed)	No remedy possible (glass damaged)	
	 Clear rinse agent excessively dosed (can be rinsed off with water) 	Reduce the dispensing setting	
Silver cutlery becomes tarnished	 Discolouration occurs as a result of sulphur compounds contained in the air and in various food left-overs 	Advise the customer; after use silver cutlery must immediately be rinsed	

10.8 Residual detergent

Customer information	Cause	Remedy
Residual detergent	 Detergent dispenser lid blocked by dishes (does not fully open up) 	Advise the customer, dishes not well loaded
	Detergent dispenser lid does not fully open up	Renew the spring of the dispenser
	Unsuitable program selected	Advise the customer
	 Tabs used in the quick or short program 	Tabs take too long to dissolve
	 Tabs not used properly (make sure that they are used in the dispenser or in the cutlery basket) 	Advise the customer, observe instructions for use of tabs
	Spray arm jets blocked (sieves locked)	Advise the customer
	 Dispenser in the spray shadow, (large pot or similar vessel loaded at the bottom left) 	Advise the customer
	Check the pumping out procedure, non-return valve	See residual food
	 Detergent very lumpy, cleaning effect and dissolving properties diminish 	Advise the customer

10.9 Damage to rinsed dishes

Customer information	Cause	Remedy	
Commencing or already present, irreversible (not rectifiable)	Degree of hardness set too high, residual hardness in washing or clear rinse cycle <5°dH	Optimise the setting after measuring	
cloudiness of glass	 Glasses not dishwasher-proof (glasses usually only suitable for use in a dishwasher) 	Advise the customer	
	Program selected too strong	 Advise the customer, use the most gentle program possible when rinsing glasses (low temperature < 50°C) 	
	Reaction time of steam in drying process too long	• Advise customer; do not switch on the appliance and only take out the dishes after a few hours, e.g. leave them in overnight	
Mechanical damage (scratches or breaks)	Scratches due to contact points / areas with other dishes	Advise the customer, avoid contact points when loading the dishwasher	
Dishes faded	Dishes not dishwasher-proof	Advise the customer; use dishwasher-proof dishes	
Rust on cutlery	 Rust on cutlery: cutlery not dishwasher-proof (knife/knife blade steel is usually not very resistant to corrosion) 	 Use dishwasher-proof cutlery! (larger proportion of chrome/ nickel, at least 18/8 or 18/10) 	
	Rust film: rust caused by corroding dishes or dishwasher baskets	Advise the customer, no rusty parts such as old pots	

10.10 Drying results

Customer information	Cause	Remedy
Does not dry properly	No clear rinse in the dispenser	Advise the customer
	 Appliance connected to a hot water supply; appliance is suitable for hot water, but it is not recommendable. 	 Advise the customer; point out the function of the heat exchanger; if necessary connect the appliance to a cold water supply.
	Dishwasher does not heat up	• Check the heating circuit in accordance with the circuit documents; observe the circuit breaker on the continuous flow heater (the circulation pump can only build up sufficient pressure if there is enough water in the dishwasher).
	Program without drying selected	 Advise the customer; the rapid program is without a drying cycle, the degree of drying option is set too low.
	 The clear rinse has dissolved too quickly for tabs with an integrated clear rinse agent. 	Advise the customer, the tabs are not suitable for this program
	Plastic dishes	 Plastic materials hardly store heat and they have a hydrophobic surface which is difficult to wet. This results in the formation of drops during the drying cycle.
	Combined detergents (2 in 1 / 3 in 1)	Advise the customer; recommend separate detergent products (clear rinse and detergent separate)

10.11 Circulation pump

Customer information	Cause	Remedy	
Circulation pump does not start up.	After a long service life the set of seals may stick to the pump wheel.	It is essential that the set of seals be renewed.	

11. Technical data IG 6... and IGV 6...

11.1 Technical Data

The data indicated may deviate upwards or downwards. The figures are those resulting from laboratory tests in accordance with EN 50242 for the start of a series.

Dimensions	
Height	85,0 cm
Width	59,8 cm
Depth	57,0 cm
Voltage / Frequency	230 V / 50 Hz
Connected load	2.3 kW
Filament energy consumptio	on 2.15 kW
Fuse protection	10 / 13 A
Dispensing device	
Rinsing agent fill quantity	120 ml
Setting 0 - 6	each 1 ml
Detergent filling quantity	45 g
Circulation pump	
Nominal voltage	230-240 V
Frequence	50 Hz
Resistance	Ha ca. 80Ω
	HI 85 apporx.Ω HI 2 13 approx.Ω
Delivery height	3,1 m
Delivery performance	25 - 30 l/min
Starting current	2.4 A
Operating current	0.31 A
Water diverter	
Frequency	50/60 Hz
Resistance	ca. 9.3 k Ω
Nominal voltage	230-240 V
(syr	nchronous motor)
Recovery / discharge / natur	al water valve
Nominal voltage	230-240 V
Frequence	50 Hz
Resistance	2 kΩ
Flow rate	2.75 l/min.
Water pressure	0.5 - 10 bar
Actuator	
Nominal voltage	110-240 V
Frequency	50/60 Hz
Resistance	0.5 - 1.5 kΩ

Continuous flow heater	
Nominal voltage	230-240 V
Frequence	50 Hz
Output	2150 W
Resistance	ca. 22 Ω
Aqua Stop Valve	
Nominal voltage	230-240 V
Frequence	50 Hz
Flow rate	2,75 l/min
Water pressure	0.5 - 10 bar
Energy label data	
Energy category	А
Washing performance	А
Drying performance	А

Volume (Permanent Rinse system)			
Temperature	Resistance in $k\Omega$	Tolerance	
25	48,4	7,9	
30	38,5	7,1	
50	16,5	6,2	
60	11,0	5,6	
65	9,1	5,6	

Klixon / NTC

85°C safety switch

Salt container - filling capacity Fine-grained salt Coarse-grained salt Salt tablets	approx. 2 kg approx. 1.5 kg approx. 0.7 kg
Detergent water pump	
Nominal voltage	230-240 V
Frequence	50 Hz
Resistance	110 - 260 Ω
Delivery height	0.9 m
Delivery performance	10 l/min



11.2 Consumption data IGV 647....

11.2.1 Appliance with water diverter and heat exchanger

	Intensive 70°	Auto 55-65°	Normal 65°	ECO 50°	Gentle 40°	Rapid 35°	Pre-wash
Time in min.	112	100-145	108	140	72	30	19
Power consumption in kWh	1.8	1.15 - 1.46	1.85	1.05	0.8	0.6	0.1
Water consumption in litres	21	14 - 19	18	14	15	10	4

11.2.2 Appliance with water diverter without heat exchanger

	Intensive 70°	Auto 55-65°	Normal 65°	ECO 50°	Gentle 40°	Rapid 35°	Pre-wash
Time in min.	115	110 - 135	106	140	75	30	19
Power consumption in kWh	1.7	1.25-1.55	1.45	1.05	0.9	0.7	0.1
Water consumption in litres	21	14 -19	18	14	15	10	4

11.3 Consumption data IG 644 to .4.

11.3.1 Appliance with water diverter and heat exchanger

	Intensive 70°	Auto 55-65°	ECO 50°	Gentle 40°	Rapid 35°	Pre-wash
Time in min.	112	95 - 145	140	72	30	19
Power consumption in kWh	1,6	1.15 - 1.60	1.06	0.8	0.6	0.1
Water consumption in litres	21	11 - 19	14	15	10	4
Water consumption in litres with aquasensor	18			12		

11.3.2 Appliance with water diverter without heat exchanger

	Intensive 70°	Auto 55-65°	Normal 65°	ECO 50°	Gentle 40°	Rapid 35°	Pre-wash
Time in min.	115	95 - 140	140	140	75	30	19
Power consumption in kWh	1.7	1.25 - 1.60	1.46	1.05	0.9	0.6	0.1
Water consumption in litres	21	11 - 19	18	15	15	10	4
Water consumption in litres with aquasensor	18				12		

11.4 Consumption data IG 634 to 0,3.

11.4.1 Appliance with water diverter and heat exchanger

	Intensive 70°	Auto 55-65°	ECO 50°	Gentle 40°	Rapid 35°	Pre-wash
Time in min.	112	95 - 145	140	72	30	19
Power consumption in kWh	1.6	1.15 - 1.50	1.05	0.8	0.6	0.1
Water consumption in litres	21	11 - 19	14	15	10	4
Water consumption in litres with aquasensor	18			12		

11.4.2 Appliance with water diverter without heat exchanger

	Intensive 70°	Auto 55-65°	Normal 65°	ECO 50°	Gentle 40°	Rapid 35°	Pre-wash
Time in min.	115	95 - 140	140	140	75	30	19
Power consumption in kWh	1.7	1.25 - 1.60	1.45	1.05	0.9	0.7	0.1
Water consumption in litres	21	11 - 19	18	15	15	10	4
Water consumption in litres with aquasensor	18				12		

11.5 Consumption data IG 647.2E

11.5.1 Appliance without heat eschanger

	Intensive 70°	Normal 65°	ECO 50°	Gentle 40°	Rapid 35°	Pre-wash
Time in min.	94	92	88	68	30	13
Power consumption in kWh	2,0	1.75	1.44	1.0	0.8	0.1
Water consumption in litres	23	23	16	19	12	5

The data indicated may deviate upwards or downwards. The figures are those resulting from laboratory tests in accordance with EN 50242 for the start of a series.