

TECHNICAL INFORMATION
CVA 640x and CVA 680x Coffee Systems

Technical Information

Table of Contents

A	Warning and Safety Instructions	7
1	General.....	7
2	Risk of Burning or Scalding	7
3	Touch Current Measurement	8
B	Modification History	8
C	Technical Data	9
D	Component Layouts.....	14
1	Optical Interface	14
2	Electrical Components	15
001	General	21
2	Function.....	21
2.1	Optical Interface	21
2.2	Water Paths.....	21
2.2.1	Overview.....	21
2.2.2	Water Path – Coffee	22
2.2.3	Water Path - Decompression - Coffee	23
2.2.4	Water Path – Hot Water	23
2.2.5	Water Path – Decompression - Hot Water	24
2.2.6	Water Path – Milk Froth.....	24
2.2.7	Water Path – Hot Milk.....	25
2.2.8	Water Path – Cold Rinse.....	25
2.2.9	Water Path – Hot Rinse.....	26
2.3	Brew Unit Control	26
2.3.1	Switch Positions	26
2.3.2	Electronic Grind Amount Compensation	27
2.3.3	Brew Unit Drive, Home Position	28
2.3.4	Brew Unit Drive, Compressing Position (Brew Position).....	29
2.3.5	Brew Unit Drive, Drain Position	30
2.4	Waste-Container Monitoring	31
2.5	Machine Response after a Power Failure.....	31
2.6	Safety Concept for Water Intake (CVA 6x05 Only).....	31
3	Fault Repair.....	32
3.1	F001 -- Coffee/Hot Water NTC (R30-14) Short-Circuited	32
3.2	F002 -- Coffee/Hot Water NTC (R30-14) Open-Circuited	32
3.3	F003 -- Steam NTC (R30-13) Short-Circuited	33
3.4	F004 -- Steam NTC (R30-13) Open-Circuited	33
3.5	F010 -- No Water Intake	34
3.6	F017 -- Insufficient Water Intake.....	35
3.7	F028 -- Too Much Ground Coffee in Brew Unit	36
3.8	F040 - Power Electronic EPL (N1-1) Fault.....	36
3.9	F041 -- EEPROM Faulty/Data Fault	37
3.10	F042 -- Line Frequency Not Registered	37
3.11	F073 -- Brew Unit Fault.....	37
3.12	F074 -- Ceramic Valve (1M29) Fault	38
3.13	F076 -- Brew Unit Compression Fault	38
3.14	F077 -- Ceramic Valve (1M29) Initialization Fault.....	38
3.15	F080 -- Coffee/Hot-Water Heater (R1-2) Not Heating	39
3.16	F081 -- Steam Heater (R1-1) Not Heating	39

Technical Information

3.17	F082 -- Coffee/Hot-Water Heater (R1-2) Overheating	40
3.18	F083 -- Steam Heater (R1-1) Overheating	41
3.19	F094 -- Water Intake Fault (CVA 6x05 Only)	41
3.20	F225 -- Ceramic Valve (2M29) Fault	42
3.21	F226 -- Ceramic Valve (2M29) Initializing Fault	43
3.22	F227 -- Cup-Edge Sensor (1B10) Short-Circuited	43
3.23	F228 -- Cup-Edge Sensor (1B10) Open-Circuited	43
3.24	F229 -- Cup-Edge Sensor (2B10) Short-Circuited	43
3.25	F230 -- Cup-Edge Sensor (2B10) Open-Circuited	44
3.26	F233 -- Cup Protection Switch (S86) Not Active	44
3.27	F234 -- Cup Protection Switch (S86) Was Activated	45
3.28	F235 -- Display Electronic EPB (N1-2) Communication Fault	46
3.29	F236 -- Auxiliary Electronic EPZ (N1-25) Communication Fault	46
3.30	"X Servings until Descaling" Shown in Display	46
3.31	"Empty Drip Tray" Message, Even Though Drip Tray Is Not Full	46
3.32	"Replace Drip Tray" Message, Even Though Drip Tray Is Inserted	46
3.33	"Empty Waste Container" Message, But Waste Container Is Not Full	47
3.34	"Fill Milk Container" Message Not Displayed	47
3.35	Built-In Depths Different	47
3.36	Door Jams when Opening	48
3.37	Coffee or Espresso Too Cold	48
3.38	Milk Froth Unsatisfactory or Sputtering	48
3.39	No or Very Little Coffee Flowing from Spout	49
3.40	Coffee Tastes Too Bitter	49
3.41	Coffee Grounds Next to the Brew Unit	49
3.42	Coffee/Hot Water Pump or Steam Pump Inoperative	50
3.43	Diagnostic Support Cannot Establish a Connection	50
3.44	Pump Running Constantly	51
3.45	Milk Froth Stream is Inconsistent	51
3.46	Empty Milk Container Not Detected	51
4	Service	52
4.1	Drink Settings (Customer Programming)	52
	4.1.1 CVA 640x	52
	4.1.2 CVA 680x	53
4.2	Machine Settings (Customer Programming)	55
	4.2.1 CVA 640x	55
	4.2.2 CVA 680x	59
4.3	Service Programming Mode	63
	4.3.1 CVA 640x	63
	4.3.2 CVA 680x	64
4.4	Service Mode	65
	4.4.1 CVA 640x	65
	4.4.2 CVA 680x	70
4.5	Removing the Appliance from a Cabinet	74
4.6	Top Rear Panel Removal	74
4.7	Bottom Rear Panel Removal	75
4.8	Preparing Machine for Servicing	76
4.9	Heater (Steam R1-1 or Coffee/Hot-Water R1-2) Removal	77
4.10	Heater NTC (Steam R30-13 or Coffee/Hot-Water R30-14) Removal	78
4.11	Heater Temperature Limiter (Steam F1-5 or Coffee/Hot-Water F1-8) Removal	78
4.12	Heater Fuse (Steam F8-1 or Coffee/Hot-Water F8-2) Removal	78
4.13	Pump (Steam M7-1 or Coffee/Hot-Water M7-2) Removal	78

Technical Information

4.14	Pump Temperature Limiter (Steam F3-1 or Coffee/Hot-Water F3-2) Removal	79
4.15	Ceramic Valve 1M29 Removal	79
4.16	Ceramic Valve 2M29 Removal	80
4.17	Inlet Valve Removal (CVA 6x05 Only)	80
4.18	EPL Power Electronic (N1-1) Removal	80
4.19	Coffee Chute Monitor Switch (S87-5) Removal	81
4.20	Beans Container Sensor (1B3-14, 2B3-14) Removal	83
4.21	Grinder (M25) Removal	84
4.22	Grinder Temperature Limiter (F3-3) Removal	85
4.23	Brew Unit Drive (M26) Removal	85
4.24	Brew Unit Present Switch (S87-2) Removal	87
4.25	Brew Unit Position Switch (S60-1, S60-2) Removal	87
4.26	Grind Amount Step Contact Switch (S51-4) Removal	87
4.27	Door Contact Switch (S24) Removal	87
4.28	Removing the Drip Tray Contact Springs from Inside the Appliance	88
4.29	Water Tank Level Switch (S12-1 or S12-3) Removal	88
4.30	Flow Meter (B3-4) Removal	88
4.31	Waste Container Present Switch (S87-4) Removal	90
4.32	RemoteVision Module Removal (CVA 680x Only)	90
4.33	Inner Door Cover Removal	90
4.34	Dispenser Adjustment Motor (M19) Removal (CVA 680x Only)	92
4.35	Spout Monitor Switch (S87-6) Removal	93
	4.35.1 CVA 640x	93
	4.35.2 CVA 680x	93
4.36	Dispensing-Area Light (H3) Removal	95
	4.36.1 CVA 640x	95
	4.36.2 CVA 680x	95
4.37	Cup Protection Switch (S86) Removal (CVA 680x Only)	97
4.38	Cup-Edge Sensor (1B10, 2B10) Removal (CVA 680x Only)	97
4.39	Milk Container Level Sensor (S12-4) Removal	98
4.40	Milk Valve (M24) Removal	100
4.41	Air Valve (M28) Removal	101
4.42	Auxiliary Electronic EPZ (N1-25) Removal	101
4.43	Control Panel and Display Electronic EPB (N1-2) Removal	102

List of Figures

Figure D-1: Optical Interface for Diagnostic Support and Program Updating	14
Figure D-2: CVA 6401	15
Figure D-3: CVA 6405	16
Figure D-4: CVA 6800	17
Figure D-5: CVA 6805	19
Figure 001-1: CVA Water Path - Overview	21
Figure 001-2: Coffee Water Path	22
Figure 001-3: Coffee Water Path, Decompression	23
Figure 001-4: Hot-Water Path	23
Figure 001-5: Hot-Water Path, Decompression	24
Figure 001-6: Milk Froth Path	24
Figure 001-7: Hot-Milk Path	25
Figure 001-8: Cold-Rinse Path	25

Technical Information

Figure 001-9: Hot-Rinse Path	26
Figure 001-10: Brew Unit Microswitches.....	27
Figure 001-11: Brew Unit Switching Cam, Ground Quantity Compensation Microswitch	27
Figure 001-12: Measurable Volume Areas 1, 2 and 3	28
Figure 001-13: Selectable Volume Areas 1, 2 and 3	28
Figure 001-14: Home Position, Rear View.....	29
Figure 001-15: Home Position, Front View	29
Figure 001-16: Compressing Position, Rear View	30
Figure 001-17: Compressing Position, Front View.....	30
Figure 001-18: Drain Position, Rear View.....	31
Figure 001-19: Drain Position, Front View	31
Figure 001-20: Pressure Pump.....	34
Figure 001-21: Brew Unit Position Switches.....	37
Figure 001-22: Coffee Hose Placement.....	45
Figure 001-23: Coupling Piece on Inside of Door	48
Figure 001-24: Ground Quantity Step Contact Switch.....	50
Figure 001-25: Three-Part Connector on Flow Meter	51
Figure 001-26: Removing the Appliance from a Cabinet	74
Figure 001-27: Top Rear Panel Removal	75
Figure 001-28: Bottom Rear Panel and Service Door Screws.....	76
Figure 001-29: Service Door, Open	76
Figure 001-30: Service Door Open, Showing Heaters.....	77
Figure 001-31: Heater Water Line Connections.....	77
Figure 001-32: Heater Assembly	78
Figure 001-33: Pump Assembly.....	79
Figure 001-34: EPL Power Electronic (N1-1) Removal.....	81
Figure 001-35: Adjustment Lever Handle	81
Figure 001-36: Bean Container Guide Retaining Screws	82
Figure 001-37: Grinder Screws.....	82
Figure 001-38: Chute Monitor Switch and Screws.....	83
Figure 001-39: Beans Container Sensor Removal	84
Figure 001-40: Grinder and Temperature Limiter	85
Figure 001-41: Brew Unit Drive.....	86
Figure 001-42: Brew Unit Removal.....	86
Figure 001-43: Brew Unit Drive Retaining Screws.....	87
Figure 001-44: Flow Meter.....	89
Figure 001-45: Flow Meter (1) and Plastic Support (2).....	89
Figure 001-46: Access Hole for Waste Container Monitor Switch	90
Figure 001-47: Service Cover	91
Figure 001-48: Hose on Inner Door Cover.....	91
Figure 001-49: Inner Door Cover Screws	92
Figure 001-50: Dispenser Adjustment Motor M19	93
Figure 001-51: Spout Holder and Pin Bracket, CVA 680x	94
Figure 001-52: Spout Monitor Switch.....	94
Figure 001-53: Hose Bracket and Lighting Assembly	96
Figure 001-54: Lighting Assembly Mounting Bracket.....	96
Figure 001-55: Cup Protection Switch	97
Figure 001-56: Cup-Edge Sensors	98
Figure 001-57: Auxiliary Electronic Cover.....	99

Technical Information

Figure 001-58: Sensor Blades	100
Figure 001-59: Milk Valve, Air Valve, Hose Bracket and Auxiliary Electronic Cover	101
Figure 001-60: Milk Container Receptacle Screws	102
Figure 001-61: Control Panel Screws	102
Figure 001-62: EPB/EPZ Electronic with Housing (CVA 680x).....	103
Figure 001-63: Touchscreen ZIF Plug	103
Figure 001-64: Display Electronic Removal, CVA 680x.....	104

List of Tables

Table C-1: CVA 640x Technical Data	11
Table C-2: CVA 680x Technical Data	13
Table C-3: Drink Temperatures.....	13
Table C-4: Quantities until Obligatory Descaling	13
Table C-5: Brew Unit Drive Specifications	13
Table C-6: Coffee/Hot-Water Heater Data	13
Table C-7: Steam Heater Data.....	14
Table C-8: Coffee/Hot-Water Pump Data	14
Table C-9: Steam Pump Data	14
Table C-10: Flow Meter Data	14
Table 001-1: Switch Cam Settings	28
Table 001-2: Drink Settings (Customer Programming), CVA 640x.....	53
Table 001-3: Drink Settings (Customer Programming), CVA 680x.....	54
Table 001-4: Machine Settings (Customer Programming), CVA 640x.....	58
Table 001-5: Machine Settings (Customer Programming), CVA 680x.....	62
Table 001-6: Service Programming Settings, CVA 640x	64
Table 001-7: Service Programming Settings, CVA 680x	65
Table 001-8: Service Mode, CVA 640x.....	69
Table 001-9: S12-1/S12-3.....	69
Table 001-10: S60-1/S60-2.....	69
Table 001-11: Service Mode, CVA 680x.....	73

A Warning and Safety Instructions

1 General

Any repairs or maintenance performed by unqualified personnel could be dangerous. All applicable laws, codes, regulations, and accident prevention guidelines must be observed when serving, modifying, testing or maintaining appliances. All repairs should be performed by a trained technician in strict accordance with local, state and national codes.

Before any service work is started, the machine must be safely disconnected from its power source. Even with the machine switched off, voltage may exist on some components.

After work has been completed, as a matter of standard practice, a visual as well as an operational check should be performed.

Note:

Prior to starting service or repair work, remove all containers and the drip tray with the spill guard grid from the appliance.

2 Risk of Burning or Scalding

Some components may be very hot, such as heaters. Also, some components may contain pressurized steam. Use caution when working on these parts.

To protect from burns:

1. Allow the CVA to cool down for approximately one hour before starting service or repair work, so that the heaters can cool.
2. In service mode, pump cool water through the heater for a few minutes to shorten the cooling time. Use the component test for each pump. See Section 001-4.4

Technical Information

3 Touch Current Measurement

Touch current measurement should be carried out on all accessible conductive parts that are not connected to ground.

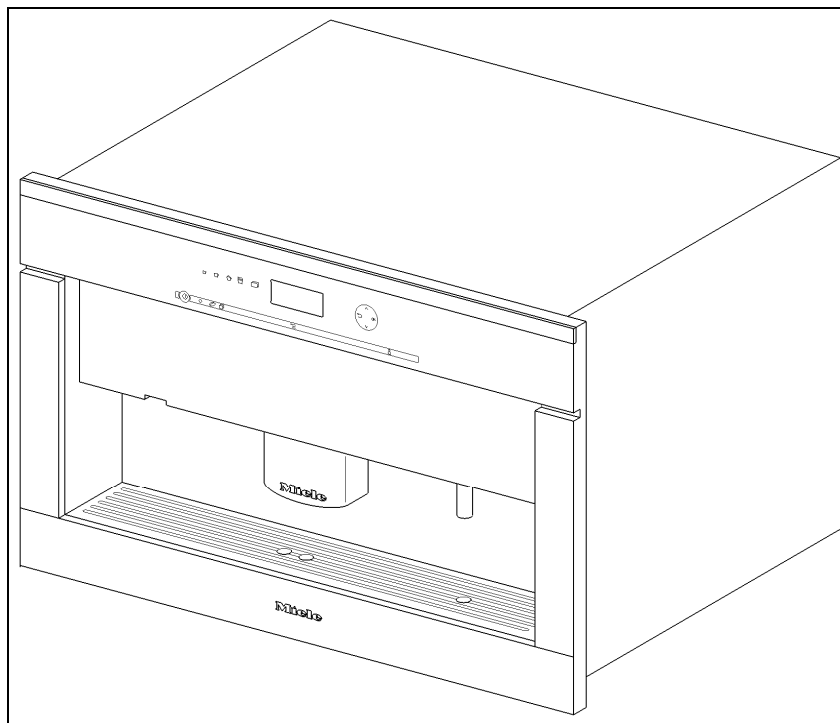
Warning!

Touch current measurement may only be performed after the ground connection of the appliance under test has been checked and found to be satisfactory!

A defective appliance, as well as accessible conductive parts that are not connected to ground, may carry dangerous voltages!

B Modification History

When?	Who?	What?
1/15/2015	Jessica Naples	Minor changes throughout
12/17/2014	Jessica Naples	Minor changes throughout
11/25/2014	Jessica Naples	Minor changes throughout
7/18/2014	Jessica Naples	CVA 680x info added
2/24/2014	Jessica Naples	Conversion for Website
1/15/2014	Sabine Hötte	Revision
10/16/2013	Sabine Hötte	Revision
7/17/2013	Sabine Hötte	Initial compilation

C Technical Data**Figure C-1: CVA 640x**

Model	CVA 6401	CVA 6405
Type	Built-in coffee machine with bean system	
Design		
PureLine	Yes	Yes
ContourLine	Yes	Yes
Display	DirectSensor	
Beverage specialties		
Espresso	Yes	Yes
Coffee	Yes	Yes
Large coffee	Yes	Yes
Cappuccino	Yes	Yes
Latte macchiato	Yes	Yes
Caffè latte	Yes	Yes
Hot water	Yes	Yes
Hot milk	Yes	Yes
Milk froth	Yes	Yes
Convenience features		
OneTouch	Yes	Yes
OneTouch for Two preparation	Yes	Yes
Aroma-friendly conical grinder	Yes	Yes
Second coffee type in powder form possible	Yes	Yes
Programmable user profiles	10	10
Selectable grinding grade	Yes	Yes
Programmable ground quantity	Yes	Yes
Programmable water quantity	Yes	Yes
Programmable water temperature	Yes	Yes

Technical Information

Model	CVA 6401	CVA 6405
Convenience features		
Programmable pre-brewing	Yes	Yes
Programmable milk and milk froth amount	Yes	Yes
Coffee pot function	Yes	Yes
User convenience		
Individual language selection	Yes	Yes
Time of day display	Yes	Yes
Date display	Yes	Yes
CupSensor	No	No
Infinitely variable height-adjustable serving spout	8.5 - 16.5 cm	8.5 - 16.5 cm
ComfortDoor	Yes	Yes
Hidden door handle	Yes	Yes
BrilliantLight	Yes	Yes
Removable coffee bean container	Yes	Yes
Removable Nespresso capsule magazine	No	No
Capacity		
Water tank	2.3 liters	2.3 liters
Beans container	500 grams	500 grams
Waste container	15 pucks	15 pucks
Programmable on and off times	Yes	Yes
Programmable standby time	Yes	Yes
Time buffer	200 hours	200 hours
Optional connection for warming drawer	No	No
Plumbed water connection	No	Yes
Door		
Door hinge	Left	Left
Cleaning and care		
Convenient cleaning program	Yes	Yes
ComfortClean	Yes	Yes
Automatic flushing of milk pipework from water container	Yes	Yes
Removable milk pipework	Yes	Yes
Removable brew unit	Yes	Yes
Efficiency and sustainability		
Energy-saving Eco mode	Yes	Yes
Appliance networking		
RemoteVision-ready	No	No
Safety		
System lock	Yes	Yes
Technical data		
Appliance dimensions		
Height	452mm	452mm
Width	595mm	595mm
Depth	480mm	480mm
Depth with door open	1060mm	1060mm
Niche dimensions		
Height	448 - 452 mm	448 - 452 mm
Width	560 - 568 mm	560 - 568 mm
Depth	550mm	550mm
Rated load	2.8kW	2.8kW

Technical Information

Model	CVA 6401	CVA 6405
Technical data		
Fuse rating	10A	10A
Voltage	110 - 120 V	110 - 120 V
Water intake hose length	-	1.5m
Power cord length	2m	2m
Standard accessories		
Milk container	Yes	Yes
Can of Illy coffee (250g)	Yes	Yes
Descaling agent	Yes	Yes
Cleaning tablets	Yes	Yes

Table C-1: CVA 640x Technical Data

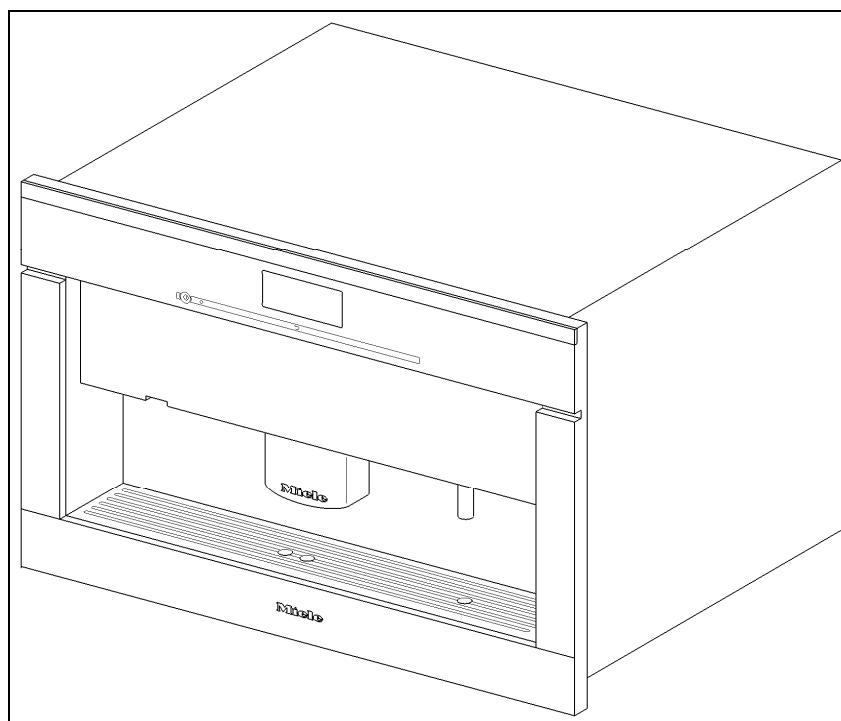


Figure C-2: CVA 680x

Model	CVA 6800	CVA 6805
Type	Built-in coffee machine with bean system	
Design		
PureLine	Yes	Yes
ContourLine	No	No
Display	M-Touch	
Beverage specialties		
Espresso	Yes	Yes
Coffee	Yes	Yes
Large coffee	Yes	Yes
Cappuccino	Yes	Yes
Latte macchiato	Yes	Yes
Caffè latte	Yes	Yes
Hot water	Yes	Yes
Hot milk	Yes	Yes
Milk froth	Yes	Yes

Technical Information

Model	CVA 6800	CVA 6805
Convenience features		
OneTouch	Yes	Yes
OneTouch for Two preparation	Yes	Yes
Aroma-friendly conical grinder	Yes	Yes
Second coffee type in powder form possible	Yes	Yes
Programmable user profiles	10	10
Selectable grinding grade	Yes	Yes
Programmable ground quantity	Yes	Yes
Programmable water quantity	Yes	Yes
Programmable water temperature	Yes	Yes
Programmable pre-brewing	Yes	Yes
Programmable milk and milk froth amount	Yes	Yes
Coffee pot function	Yes	Yes
User convenience		
Individual language selection	Yes	Yes
Time of day display	Yes	Yes
Date display	Yes	Yes
CupSensor	Yes	Yes
Infinitely variable height-adjustable serving spout	8.5 - 16.5 cm	8.5 - 16.5 cm
ComfortDoor	Yes	Yes
Hidden door handle	Yes	Yes
BrilliantLight	Yes	Yes
Removable coffee bean container	Yes	Yes
Removable Nespresso capsule magazine	No	No
Capacity		
Water tank	2.3 liters	2.3 liters
Beans container	500 grams	500 grams
Waste container	15 pucks	15 pucks
Programmable on and off times	Yes	Yes
Programmable standby time	Yes	Yes
Time buffer	200 hours	200 hours
Optional connection for warming drawer	No	No
Plumbed water connection	No	Yes
Door		
Door hinge	Left	Left
Cleaning and care		
Convenient cleaning program	Yes	Yes
ComfortClean	Yes	Yes
Automatic flushing of milk pipework from water container	Yes	Yes
Removable milk pipework	Yes	Yes
Removable brew unit	Yes	Yes
Efficiency and sustainability		
Energy-saving Eco mode	Yes	Yes
Appliance networking		
RemoteVision-ready	Yes	Yes
Safety		
System lock	Yes	Yes

Technical Information

Model	CVA 6800	CVA 6805
Technical data		
Appliance dimensions		
Height	452mm	452mm
Width	595mm	595mm
Depth	480mm	480mm
Depth with door open	1060mm	1060mm
Niche dimensions		
Height	448 - 452 mm	448 - 452 mm
Width	560 - 568 mm	560 - 568 mm
Depth	550mm	550mm
Rated load	2.8kW	2.8kW
Fuse rating	10A	10A
Voltage	110 - 120 V	110 - 120 V
Water intake hose length	-	1.5m
Power cord length	2m	2m
Standard accessories		
Milk container	Yes	Yes
Can of Illy coffee (250g)	Yes	Yes
Descaling agent	Yes	Yes
Cleaning tablets	Yes	Yes

Table C-2: CVA 680x Technical Data

Drink	Temperature [°C] measured 1cm under spout ¹
Espresso	86 ± 3
Coffee	86 ± 3
Hot milk	Min. 50
Milk froth	Min. 50

Table C-3: Drink Temperatures

¹ Measure the temperature half an inch (1 centimeter) below the spout, **not** in the cup.

Water hardness settings	Quantities (approx.) until display shows "No. until descaling: 50"	
	Steam [min]	Coffee [l]
Soft	90	80
Medium	60	60
Hard	30	40
Very hard	20	20

Table C-4: Quantities until Obligatory Descaling

Brew unit drive (M26)		
Voltage	V	0 - 12
		PWM voltage (pulse-width modulated)

Table C-5: Brew Unit Drive Specifications

Coffee/Hot-water heater (R1-2) (white wires)				
Features		With stainless-steel water pipe		
Voltage	V	120		
Power rating	W	1400		
Overheating protection (F8-2)	°C	172		
Temperature monitor (F1-8)	°C	116		
NTC (R30-14)	°C	25	100	160
	kΩ	100	5.5	1

Table C-6: Coffee/Hot-Water Heater Data

Technical Information

Steam heater (R1-1) (red wires)				
Features		With stainless-steel water pipe		
Voltage	V	120		
Power rating	W	1400		
Overheating protection (F8-1)	°C	216		
Temperature monitor (F1-5)	°C	170		
NTC (R30-13)	°C	25	100	160
	kΩ	100	5.5	1

Table C-7: Steam Heater Data

Coffee/Hot-water pump (M7-2)		
Construction type		Reciprocating pump
Voltage	V	120
Power rating	W	60
Temperature limiter (F3-2)	°C	115

Table C-8: Coffee/Hot-Water Pump Data

Steam pump (M7-1)		
Construction type		Reciprocating pump
Voltage	V	120
Power rating	W	65
Temperature limiter (F3-1)	°C	115

Table C-9: Steam Pump Data

Flow meter (B3-4)		
Pulses per rotation	No.	2

Table C-10: Flow Meter Data

D Component Layouts

1 Optical Interface

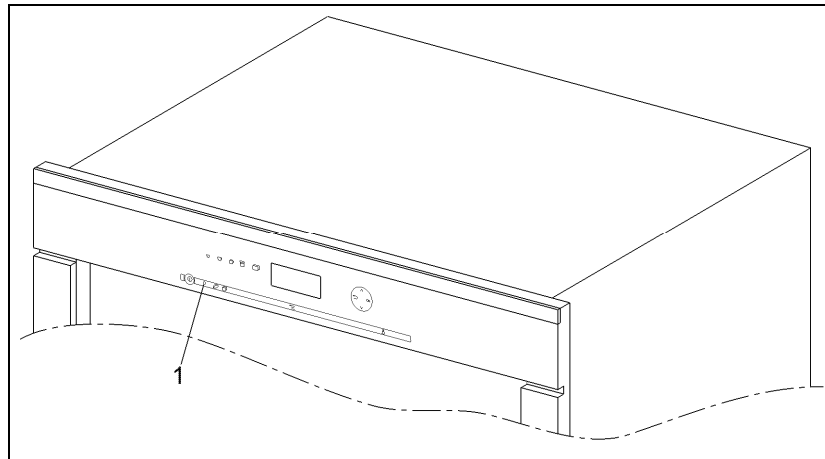
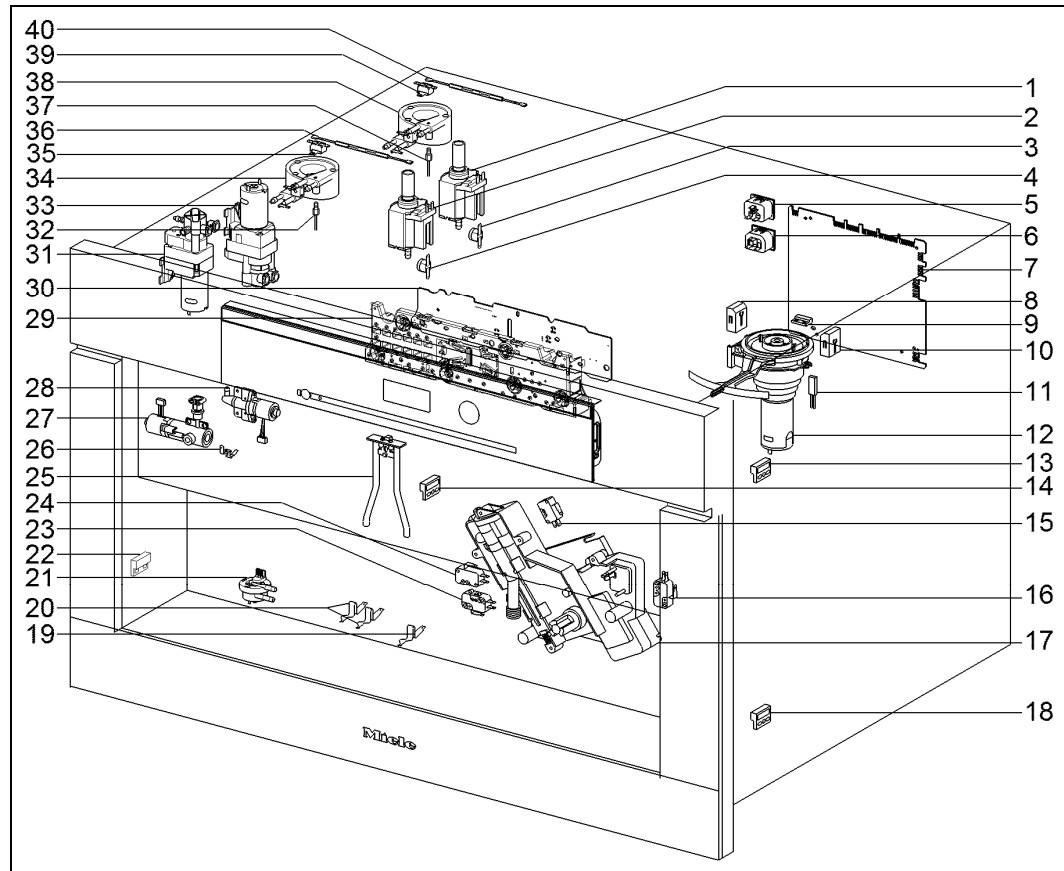


Figure D-1: Optical Interface for Diagnostic Support and Program Updating

2 Electrical Components**Figure D-2: CVA 6401**

- | | |
|---|--|
| 1 Coffee/Hot-water pump (M7-2) | 21 Flow meter (B3-4) |
| 2 Steam pump (M7-1) | 22 Waste container present switch (S87-4) |
| 3 Coffee/Hot-water pump temperature limiter (F3-2) | 23 Brew unit position switch, bottom (S60-2) |
| 4 Steam pump temperature limiter (F3-1) | 24 Brew unit position switch, top (S60-1) |
| 5 Power socket | 25 Serving-area light (H3) |
| 6 Warming-drawer socket | 26 Milk container level sensor (S12-4) |
| 7 Power electronic EPL (N1-1) | 27 Milk valve (M24) |
| 8 Beans container sensor (1B3-14) | 28 Air valve (M28) |
| 9 Ground coffee chute switch (S87-5) | 29 Control panel |
| 10 Beans container sensor (2B3-14) | 30 Display electronic EPB (N1-2) |
| 11 Grinder temperature limiter (F3-3) | 31 Ceramic valve (1M29) with positioning switch (1S60-3) and step contact switch (1S51-1) |
| 12 Grinder (M25) | 32 Steam heater NTC (R30-13) |
| 13 Door contact switch (S24) | 33 Ceramic valve (2M29) with positioning switch (2S60-3) and step contact switch (2S51-1) |
| 14 Spout monitoring switch (S87-6) | 34 Steam heater (R1-1) |

Technical Information

- | | |
|---|--|
| 15 Ground quantity step contact switch (S51-4) | 35 Steam heater temperature limiter (F1-5) |
| 16 Brew unit present switch (S87-2) | 36 Steam heater fuse (F8-1) |
| 17 Brew unit drive (M26) | 37 Coffee/Hot-water heater NTC (R30-14) |
| 18 Water tank minimum/maximum level switches (S12-1/S12-3) | 38 Coffee/Hot-water heater (R1-2) |
| 19 Drip tray level switch (S12-2) | 39 Coffee/Hot-water heater temperature limiter (F1-8) |
| 20 Drip tray monitor switch (S87-1) | 40 Coffee/Hot-water heater fuse (F8-2) |

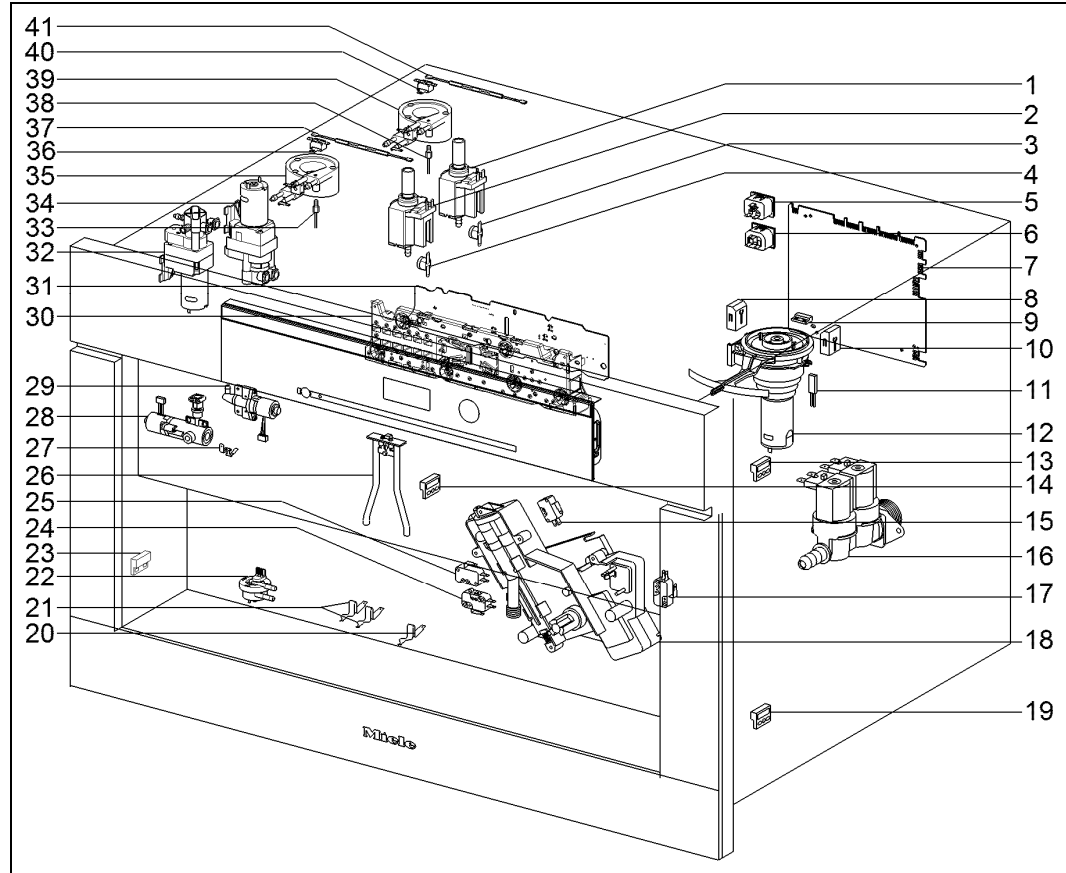


Figure D-3: CVA 6405

- | | |
|---|---|
| 1 Coffee/Hot-water pump (M7-2) | 22 Flow meter (B3-4) |
| 2 Steam pump (M7-1) | 23 Waste container present switch (S87-4) |
| 3 Coffee/Hot-water pump temperature limiter (F3-2) | 24 Brew unit position switch, bottom (S60-2) |
| 4 Steam pump temperature limiter (F3-1) | 25 Brew unit position switch, top (S60-1) |
| 5 Power socket | 26 Serving-area light (H3) |
| 6 Warming-drawer socket | 27 Milk container level sensor (S12-4) |
| 7 Power electronic EPL (N1-1) | 28 Milk valve (M24) |
| 8 Beans container sensor (1B3-14) | 29 Air valve (M28) |
| 9 Ground coffee chute switch (S87-5) | 30 Control panel |

Technical Information

- | | |
|---|--|
| 10 Beans container sensor (2B3-14) | 31 Display electronic EPB (N1-2) |
| 11 Grinder temperature limiter (F3-3) | 32 Ceramic valve (1M29) with positioning switch (1S60-3) and step contact switch (1S51-1) |
| 12 Grinder (M25) | 33 Steam heater NTC (R30-13) |
| 13 Door contact switch (S24) | 34 Ceramic valve (2M29) with positioning switch (2S60-3) and step contact switch (2S51-1) |
| 14 Spout monitoring switch (S87-6) | 35 Steam heater (R1-1) |
| 15 Ground quantity step contact switch (S51-4) | 36 Steam heater temperature limiter (F1-5) |
| 16 Inlet valve (1Y63, 2Y63) | 37 Steam heater fuse (F8-1) |
| 17 Brew unit present switch (S87-2) | 38 Coffee/Hot-water heater NTC (R30-14) |
| 18 Brew unit drive (M26) | 39 Coffee/Hot-water heater (R1-2) |
| 19 Water tank minimum/maximum level switches (S12-1/S12-3) | 40 Coffee/Hot-water heater temperature limiter (F1-8) |
| 20 Drip tray level switch (S12-2) | 41 Coffee/Hot-water heater fuse (F8-2) |
| 21 Drip tray monitor switch (S87-1) | |

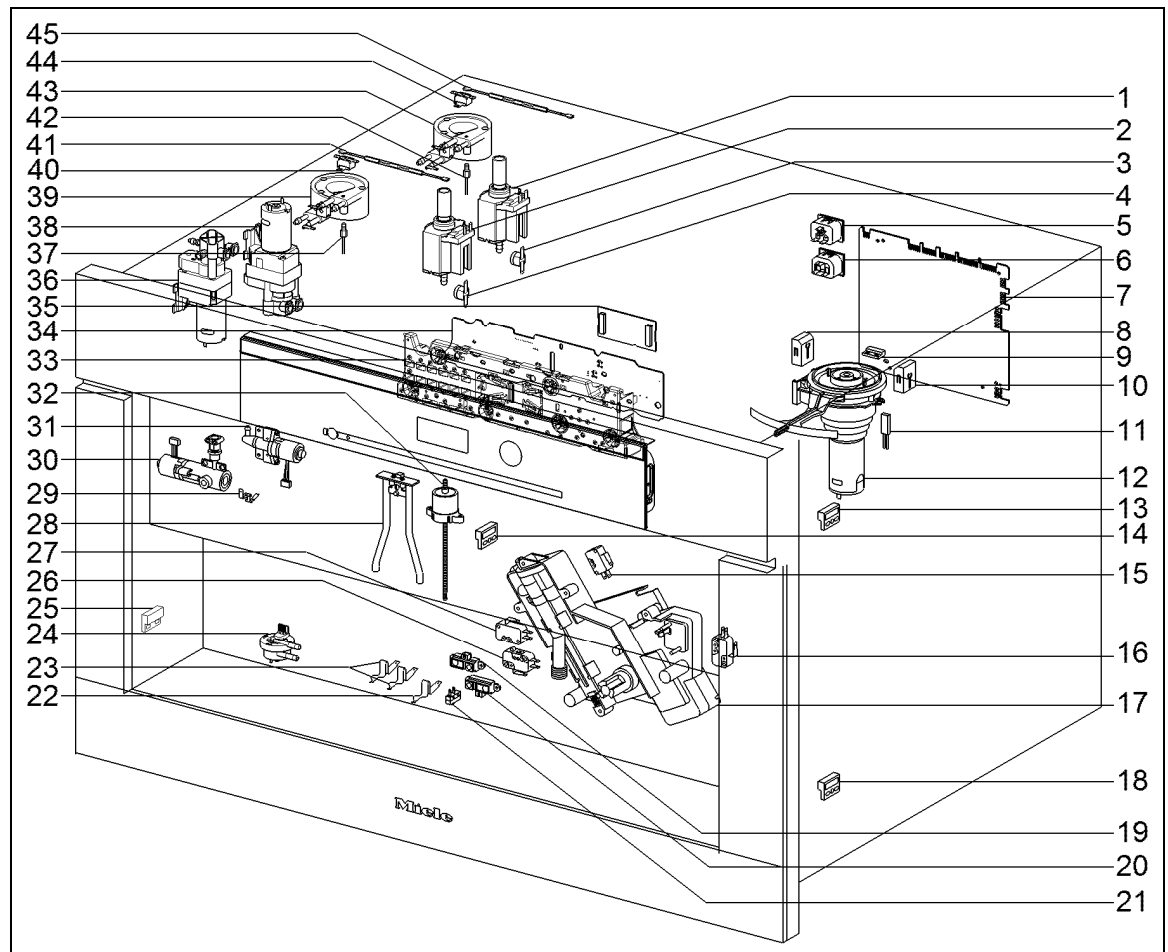


Figure D-4: CVA 6800

Technical Information

- | | |
|---|--|
| 1 Coffee/Hot-water pump (M7-2) | 23 Drip tray monitor switch (S87-1) |
| 2 Steam pump (M7-1) | 24 Flow meter (B3-4) |
| 3 Coffee/Hot-water pump temperature limiter (F3-2) | 25 Waste container present switch (S87-4) |
| 4 Steam pump temperature limiter (F3-1) | 26 Brew unit position switch, bottom (S60-2) |
| 5 Power socket | 27 Brew unit position switch, top (S60-1) |
| 6 Warming-drawer socket | 28 Serving-area light (H3) |
| 7 Power electronic EPL (N1-1) | 29 Milk container level sensor (S12-4) |
| 8 Beans container sensor (1B3-14) | 30 Milk valve (M24) |
| 9 Ground coffee chute switch (S87-5) | 31 Air valve (M28) |
| 10 Beans container sensor (2B3-14) | 32 Dispenser adjustment motor (M19) |
| 11 Grinder temperature limiter (F3-3) | 33 Auxiliary electronic EPZ (N1-25) |
| 12 Grinder (M25) | 34 Display electronic EPB (N1-2) |
| 13 Door contact switch (S24) | 35 Circuit board (part of the display electronic assembly) |
| 14 Spout monitoring switch (S87-6) | 36 Ceramic valve (1M29) with positioning switch (1S60-3) and step contact switch (1S51-1) |
| 15 Ground quantity step contact switch (S51-4) | 37 Steam heater NTC (R30-13) |
| 16 Brew unit present switch (S87-2) | 38 Ceramic valve (2M29) with positioning switch (2S60-3) and step contact switch (2S51-1) |
| 17 Brew unit drive (M26) | 39 Steam heater (R1-1) |
| 18 Water tank minimum/maximum level switches (S12-1/S12-3) | 40 Steam heater temperature limiter (F1-5) |
| 19 Cup-edge sensor (1B10) | 41 Steam heater fuse (F8-1) |
| 20 Cup-edge sensor (2B10) | 42 Coffee/Hot-water heater NTC (R30-14) |
| 21 Cup protection switch (S86) | 43 Coffee/Hot-water heater (R1-2) |
| 22 Drip tray level switch (S12-2) | 44 Coffee/Hot-water heater temperature limiter (F1-8) |
| | 45 Coffee/Hot-water heater fuse (F8-2) |

Technical Information

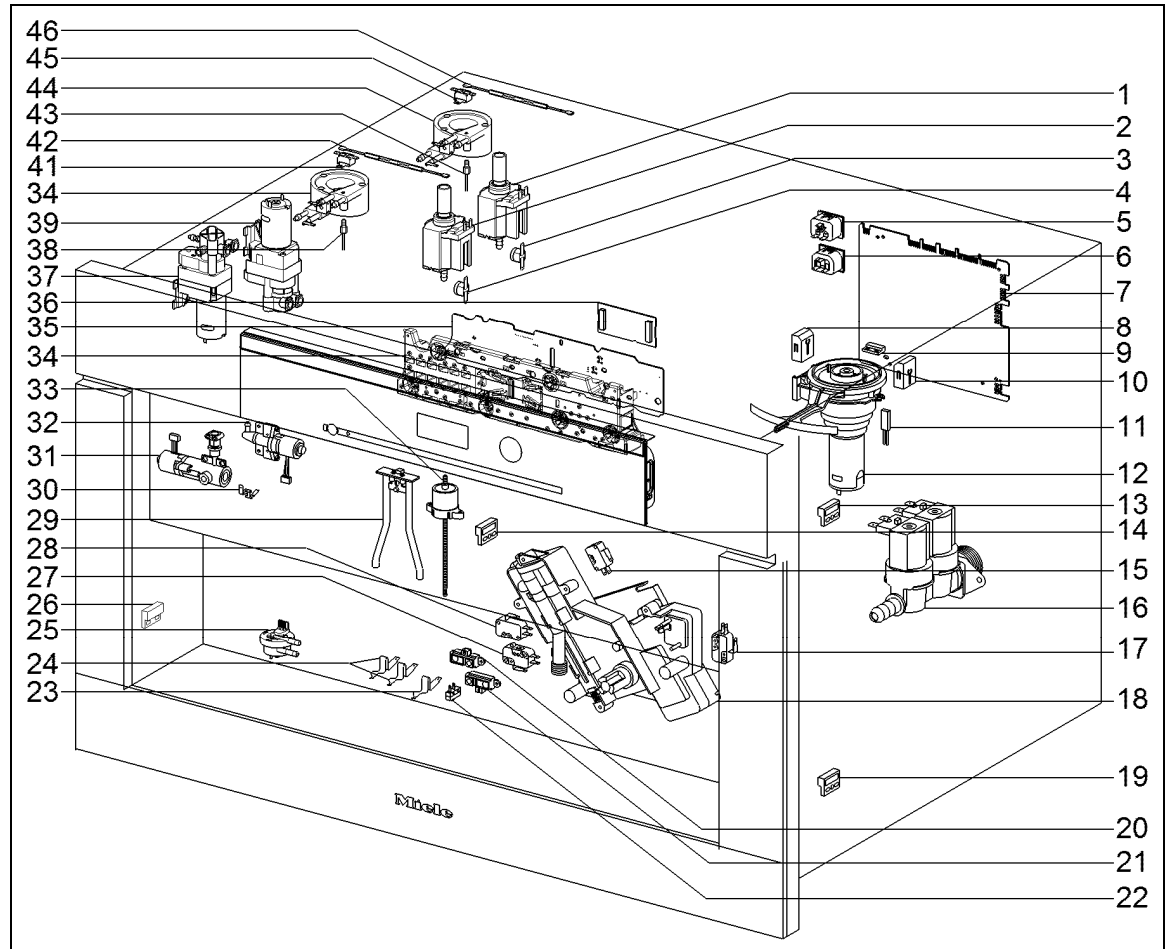


Figure D-5: CVA 6805

- | | | | |
|----|--|----|--|
| 1 | Coffee/Hot-water pump (M7-2) | 24 | Drip tray monitor switch (S87-1) |
| 2 | Steam pump (M7-1) | 25 | Flow meter (B3-4) |
| 3 | Coffee/Hot-water pump temperature limiter (F3-2) | 26 | Waste container present switch (S87-4) |
| 4 | Steam pump temperature limiter (F3-1) | 27 | Brew unit position switch, bottom (S60-2) |
| 5 | Power socket | 28 | Brew unit position switch, top (S60-1) |
| 6 | Warming-drawer socket | 29 | Serving-area light (H3) |
| 7 | Power electronic EPL (N1-1) | 30 | Milk container level sensor (S12-4) |
| 8 | Beans container sensor (1B3-14) | 31 | Milk valve (M24) |
| 9 | Ground coffee chute switch (S87-5) | 32 | Air valve (M28) |
| 10 | Beans container sensor (2B3-14) | 33 | Dispenser adjustment motor (M19) |
| 11 | Grinder temperature limiter (F3-3) | 34 | Auxiliary electronic EPZ (N1-25) |
| 12 | Grinder (M25) | 35 | Display electronic EPB (N1-2) |
| 13 | Door contact switch (S24) | 36 | Circuit board (part of the display electronic assembly) |
| 14 | Spout monitoring switch (S87-6) | 37 | Ceramic valve (1M29) with positioning switch (1S60-3) and step contact switch (1S51-1) |
| 15 | Ground quantity step contact switch (S51-4) | 38 | Steam heater NTC (R30-13) |

Technical Information

- | | |
|---|--|
| 16 Inlet valves (1Y63, 2Y63) | 39 Ceramic valve (2M29) with positioning switch (2S60-3) and step contact switch (2S51-1) |
| 17 Brew unit present switch (S87-2) | 40 Steam heater (R1-1) |
| 18 Brew unit drive (M26) | 41 Steam heater temperature limiter (F1-5) |
| 19 Water tank minimum/maximum level switches (S12-1/S12-3) | 42 Steam heater fuse (F8-1) |
| 20 Cup-edge sensor (1B10) | 43 Coffee/Hot-water heater NTC (R30-14) |
| 21 Cup-edge sensor (2B10) | 44 Coffee/Hot-water heater (R1-2) |
| 22 Cup protection switch (S86) | 45 Coffee/Hot-water heater temperature limiter (F1-8) |
| 23 Drip tray level switch (S12-2) | 46 Coffee/Hot-water heater fuse (F8-2) |

001 General

2 Function

2.1 Optical Interface

The appliance has an optical interface for diagnostic support and program updating (see Figure D-1). Its location can be found by using the optical interface search function of the MDU (Miele Diagnostic Utility).

2.2 Water Paths

2.2.1 Overview

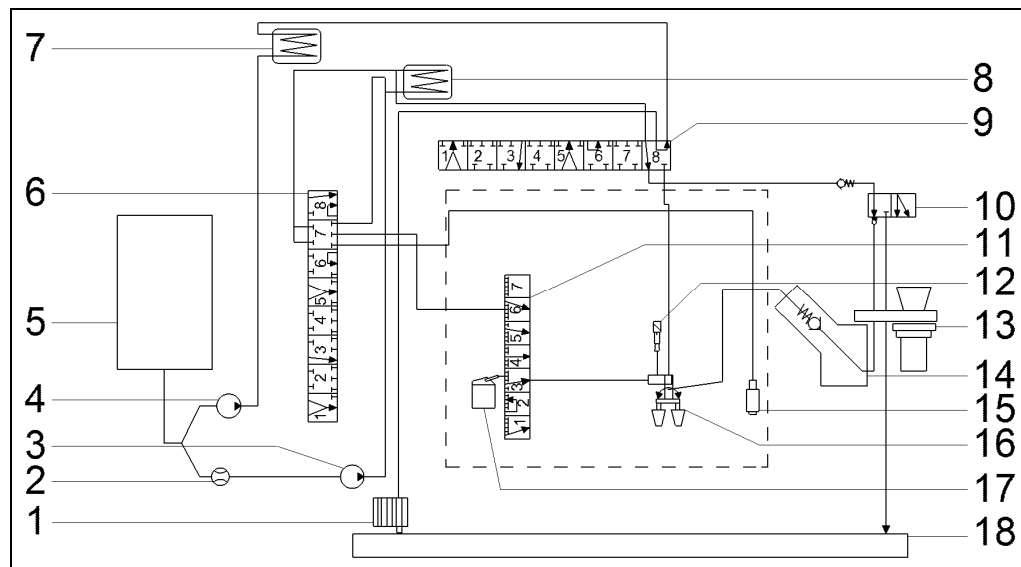


Figure 001-1: CVA Water Path - Overview

- | | | | |
|---------------------|-------------------------|--------------------------------|------------------|
| 1 | Decompression vessel | 10 | Drain valve |
| 2 | Flow meter | 11 | Milk valve (M24) |
| 3 | Coffee/hot-water pump | Pos. 1 = Rinse | |
| 4 | Steam pump | Pos. 2 = Container - Rinse | |
| 5 | Water tank | Pos. 3 = Service | |
| 6 | Ceramic valve (2M29) | Pos. 4 = Milk froth | |
| Pos. 1 = Vacant | | Pos. 6 = Hot milk | |
| Pos. 2 = Closed | | Pos. 7 = Initializing - Closed | |
| Pos. 3 = Hot water | | 12 | Air valve (M28) |
| Pos. 4 = Closed | | 13 | Grinder (M25) |
| Pos. 5 = Hot rinse | | 14 | Brew unit |
| Pos. 6 = Cold rinse | | 15 | Hot-water spout |
| Pos. 7 = Closed | | 16 | Coffee spout |
| Pos. 8 = Vacant | | 17 | Milk container |
| 7 | Steam heater | 18 | Drip tray |
| 8 | Coffee/hot-water heater | | |
| 9 | Ceramic valve (1M29) | | |
| Pos. 1 = Vacant | | | |

Technical Information

- Pos. 2 = Closed
- Pos. 3 = Steam
- Pos. 4 = Closed
- Pos. 5 = Vacant
- Pos. 6 = Decompression - Hot water
- Pos. 7 = Closed
- Pos. 8 = Coffee
- Pos. 8 = Decompression - Coffee

2.2.2 Water Path – Coffee

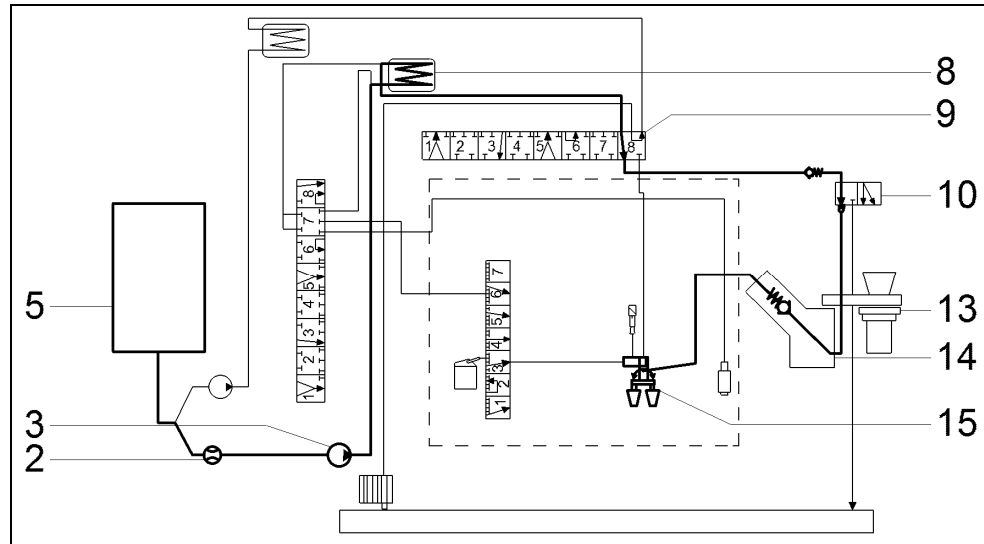


Figure 001-2: Coffee Water Path

- | | |
|---|-------------------------------|
| 2 Flow meter | 10 Drain valve in Pos. Coffee |
| 3 Coffee/hot-water pump | 13 Grinder (M25) |
| 5 Water tank | 14 Brew unit |
| 8 Coffee/hot-water heater | 16 Coffee spout |
| 9 Ceramic valve (1M29) in Pos. 8 = Coffee | |

2.2.3 Water Path - Decompression - Coffee

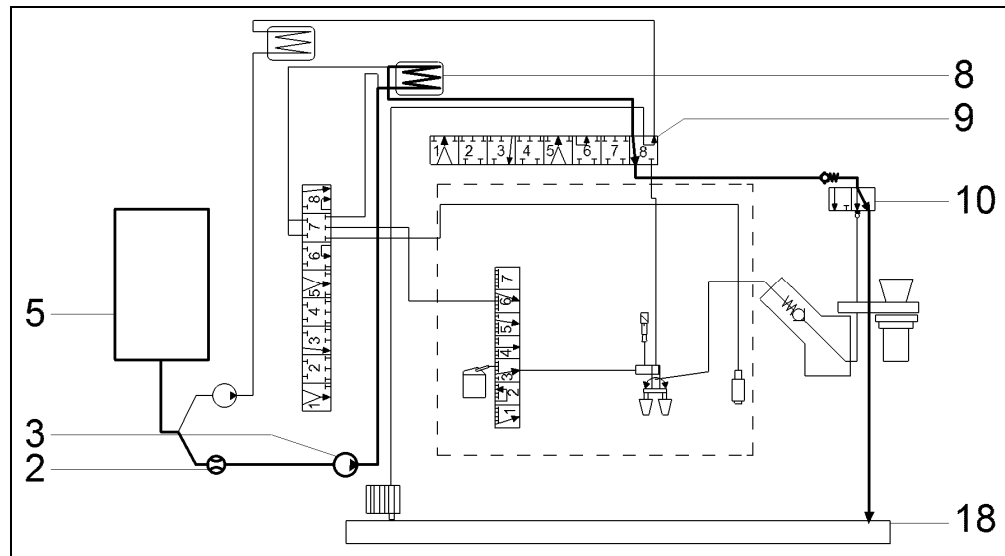


Figure 001-3: Coffee Water Path, Decompression

- | | |
|---------------------------|---|
| 2 Flow meter | 9 Ceramic valve (1M29) in Pos. 8 = Decompression - Coffee |
| 3 Coffee/hot-water pump | 10 Drain valve in Pos. Decompression - Coffee |
| 5 Water tank | 18 Drip tray |
| 8 Coffee/hot-water heater | |

2.2.4 Water Path – Hot Water

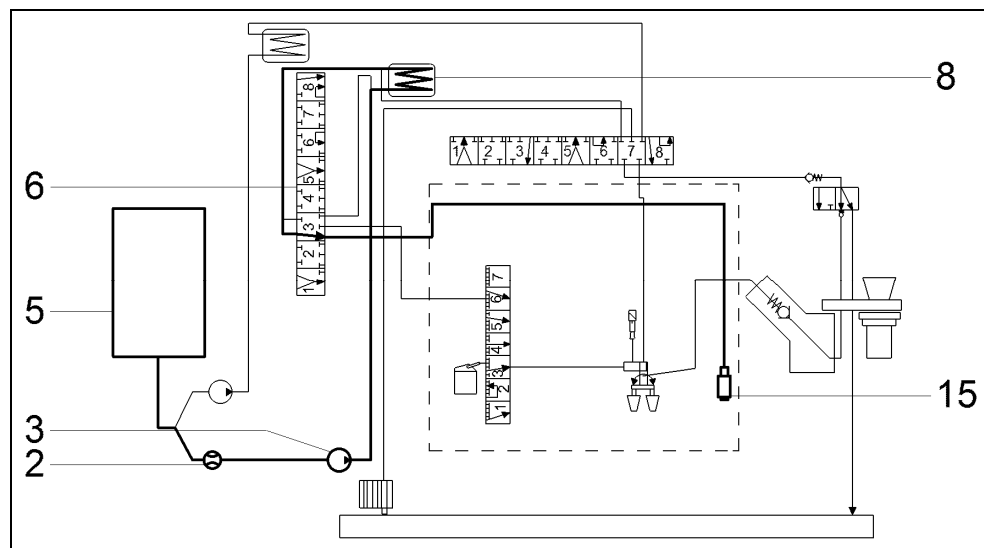


Figure 001-4: Hot-Water Path

- | | |
|-------------------------|--|
| 2 Flow meter | 6 Ceramic valve (2M29) in Pos. 3 = Hot water |
| 3 Coffee/hot-water pump | 8 Coffee/hot-water heater |
| 5 Water tank | 15 Hot-water spout |

Technical Information

2.2.5 Water Path – Decompression - Hot Water

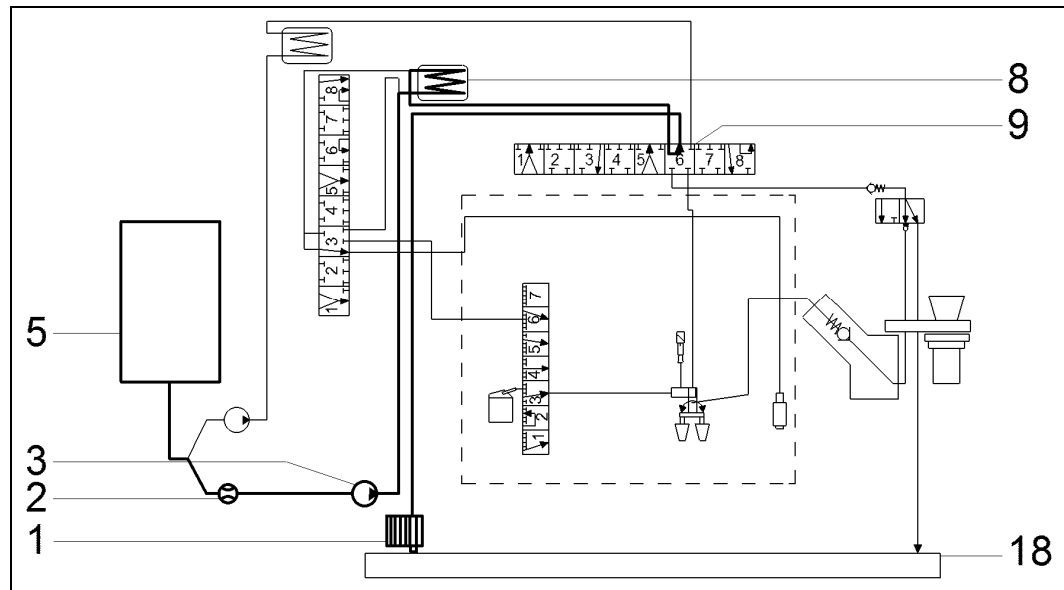


Figure 001-5: Hot-Water Path, Decompression

- | | |
|-------------------------|--|
| 1 Decompression vessel | 8 Coffee/hot-water heater |
| 2 Flow meter | 9 Ceramic valve (1M29) in Pos. 6 = Decompression - Hot water |
| 3 Coffee/hot-water pump | 18 Drip tray |
| 5 Water tank | |

2.2.6 Water Path – Milk Froth

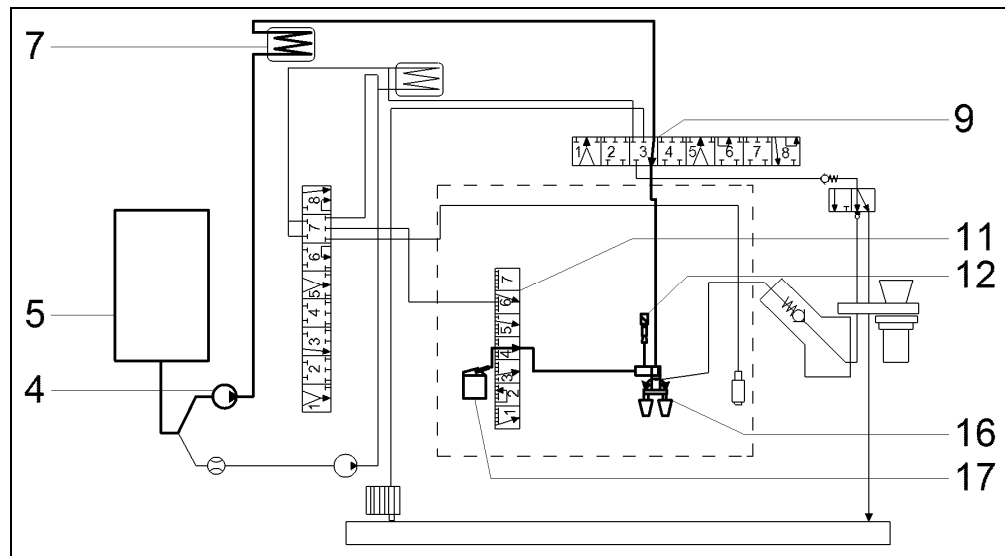


Figure 001-6: Milk Froth Path

- | | |
|----------------|--|
| 4 Steam pump | 11 Milk valve (M24) in Pos. 4 = Milk froth |
| 5 Water tank | 12 Air valve (M28) |
| 7 Steam heater | 16 Coffee spout |

9 Ceramic valve (1M29) in Pos. 3 =
Steam

17 Milk container

2.2.7 Water Path – Hot Milk

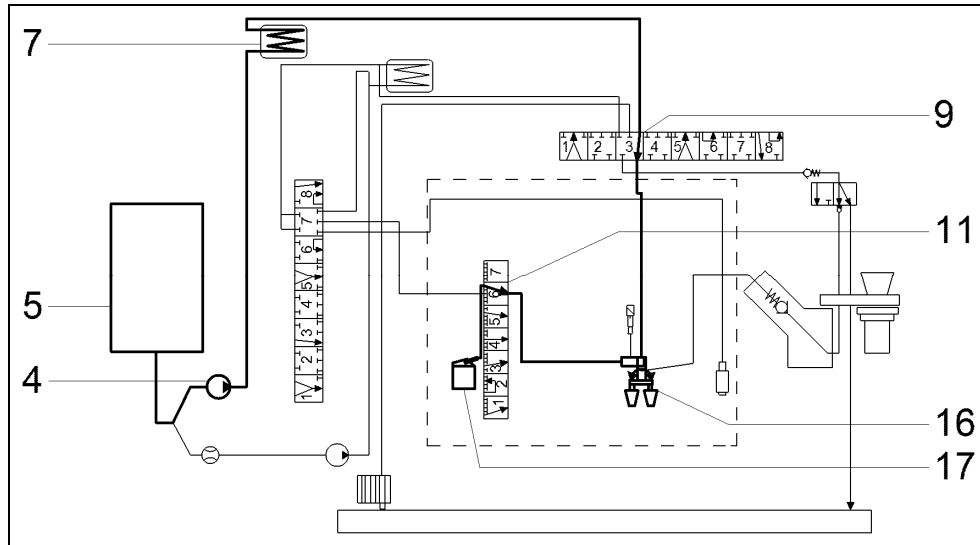


Figure 001-7: Hot-Milk Path

4 Steam pump

11 Milk valve (M24) in Pos. 6 =
Hot milk

5 Water tank

16 Coffee spout

7 Steam heater

17 Milk container

9 Ceramic valve (1M29) in Pos. 3 =
Steam

2.2.8 Water Path – Cold Rinse

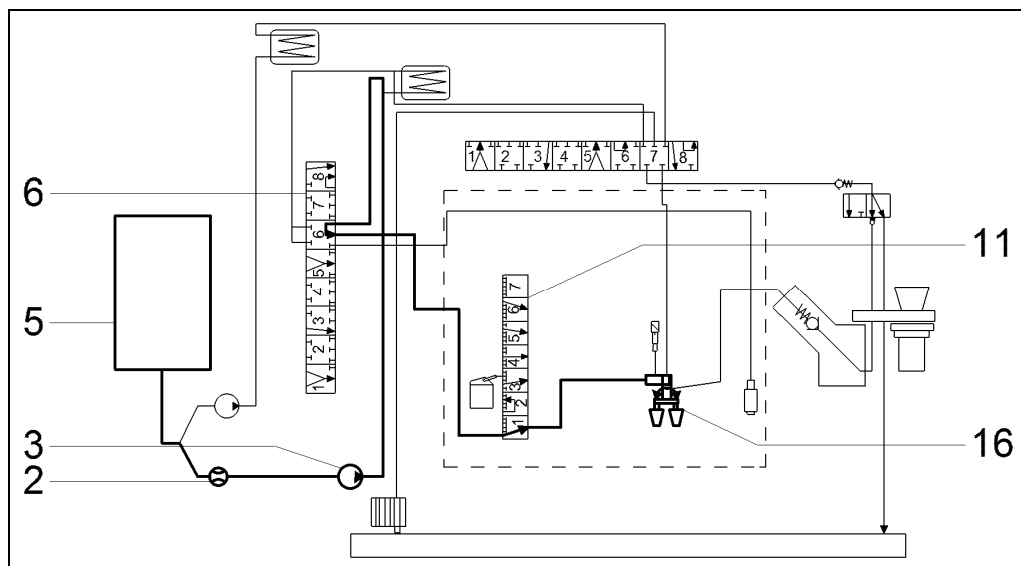


Figure 001-8: Cold-Rinse Path

2 Flow meter

6 Ceramic valve (2M29) in Pos. 6 = Cold
rinse

Technical Information

- | | |
|-------------------------|---------------------------------------|
| 3 Coffee/Hot-water pump | 11 Milk valve (M24) in Pos. 1 = Rinse |
| 5 Water tank | 16 Coffee spout |

2.2.9 Water Path – Hot Rinse

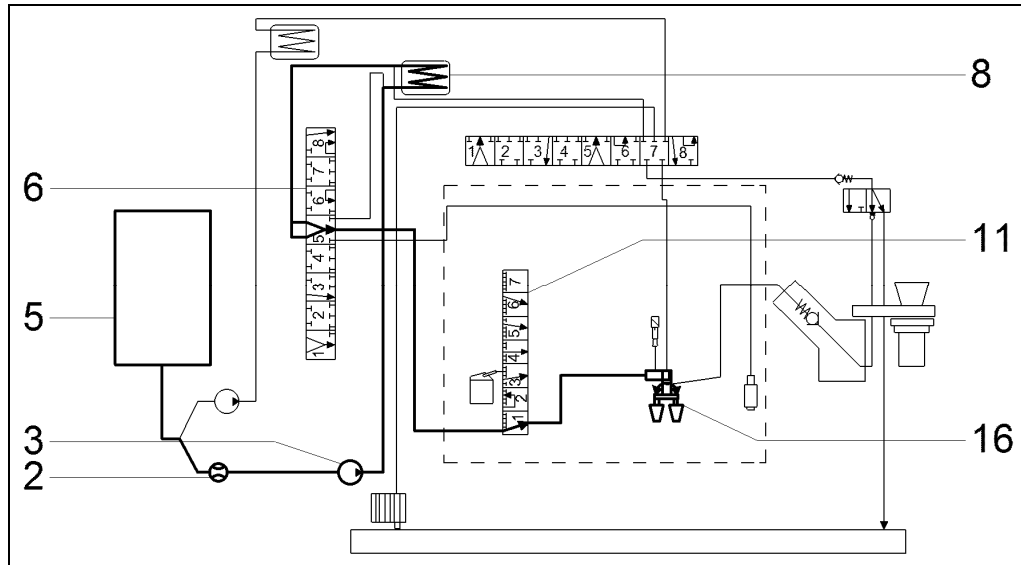


Figure 001-9: Hot-Rinse Path

- | | |
|--|---------------------------------------|
| 2 Flow meter | 8 Coffee/Hot-water heater |
| 3 Coffee/Hot-water pump | 11 Milk valve (M24) in Pos. 1 = Rinse |
| 5 Water tank | 16 Coffee spout |
| 6 Ceramic valve (2M29) in Pos. 5 = Hot rinse | |

2.3 Brew Unit Control

Coffee is dispensed into the hopper of the brew unit by the grinder operation. The brew unit drive motor is energized and the brew unit drives toward the “brew” position; the ground coffee is compressed between the filters. Once the brew unit position switch is actuated, power to the brew unit drive motor is interrupted. Hot water is pumped into the brew unit, which passes through the filters, mixes with the grounds, and then exits the brew unit as coffee. The brew unit drive motor is now energized in the reverse position. This drives the brew unit back toward the home position. The compressed used grounds are dumped as pucks into the waste container. Once the brew unit home switch is actuated, power to the brew unit drive motor is interrupted.

2.3.1 Switch Positions

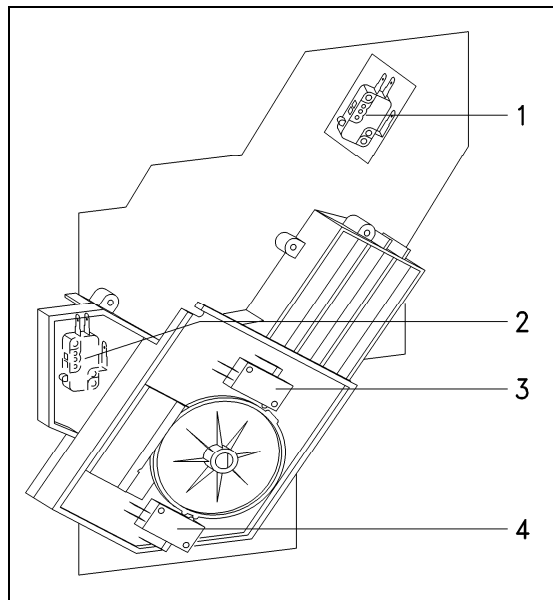
The brew unit is controlled by 4 microswitches (Figure 001-10).

The drive system and actuator disk are in the neutral position when the left-hand actuator of the double cam is activating the upper microswitch (Figure 001-10, Item 3). This is the initial default position of the brew unit.

When the brew unit is correctly installed, the brew unit present switch (Figure 001-10, Item 2) is activated.

Technical Information

After the brew unit has been activated, if one of the two position switches (Figure 001-10, Item 3 or 4) has not switched within approximately 10 seconds, fault F073 will be indicated (see Section 001-3.11).



- 1 Grind amount compensation microswitch (S51/4)
- 2 Brew unit present switch (S87/2)
- 3 Brew unit position switch, top (S60-1)
- 4 Brew unit position switch, bottom (S60-2)

Figure 001-10: Brew Unit Microswitches

2.3.2 Electronic Grind Amount Compensation

The grind amount compensation balances out variations in grinder settings and coffee types. The grind amount can be set in the customer programming mode for the various coffee types. The setting range is divided into levels 1 to 7, which cover grinding times of 4.6 to 8.3 seconds (± 1.6 seconds ground quantity compensation). To prevent the brewing mechanism from overfilling, the maximum grinding time is limited to 10 seconds.

During the brewing process, the switching cam on the brew unit (Figure 001-11, Item 1) passes over the microswitch actuator (Figure 001-11, Item 2).

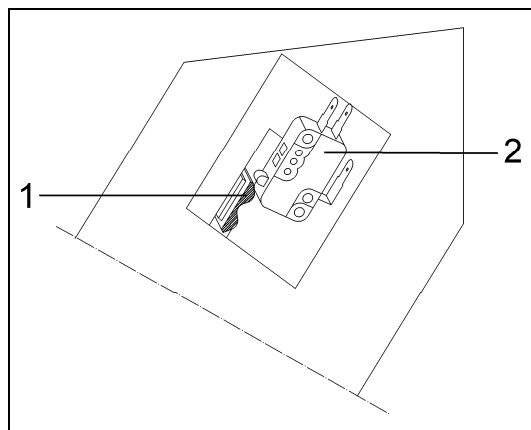


Figure 001-11: Brew Unit Switching Cam, Ground Quantity Compensation Microswitch

The further the switch cam advances, the greater the ground quantity in the brew unit. Five different settings can be registered:

Technical Information

Position	Microswitch Position	Switching Process
1	In front of the first cam	Off
2	On the first cam	Off, On
3	Between the two cams	Off, On, Off
4	On the second cam	Off, On, Off, On
5	Behind the second cam	Off, On, Off, On, Off

Table 001-1: Switch Cam Settings

Three volume areas can be measured for the ground quantity; see Figure 001-12. They represent the selectable volume areas on the machine; see Figure 001-13.

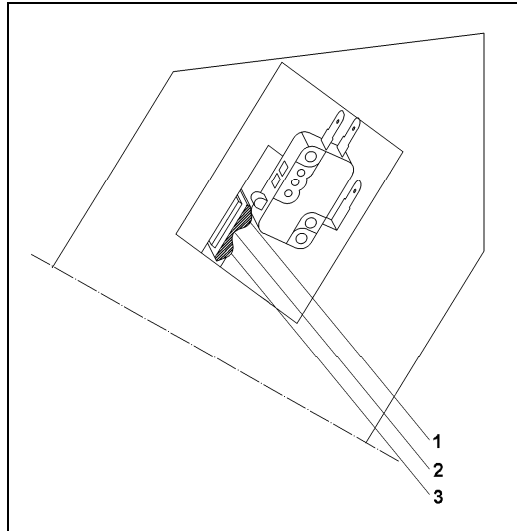


Figure 001-12: Measurable Volume Areas 1, 2 and 3

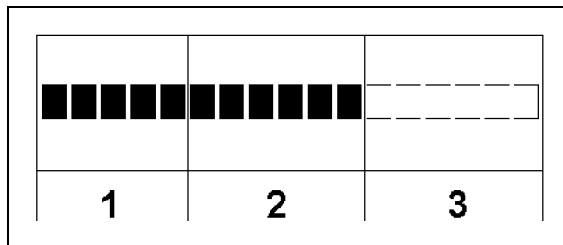


Figure 001-13: Selectable Volume Areas 1, 2 and 3

If the measure quantity varies from the set quantity, then the grinding time will be increased or decreased by approximately 0.2 seconds as appropriate during the next grinding cycle. Because the maximum ground quantity compensation is ± 1.6 seconds, this adjustment can be repeated up to 8 times.

2.3.3 Brew Unit Drive, Home Position

If the brew unit is in the home position, the left cam of the double-cam element activates the top microswitch; the bottom microswitch is not switched (Figure 001-14). The cam is in the home position (Figure 001-15).

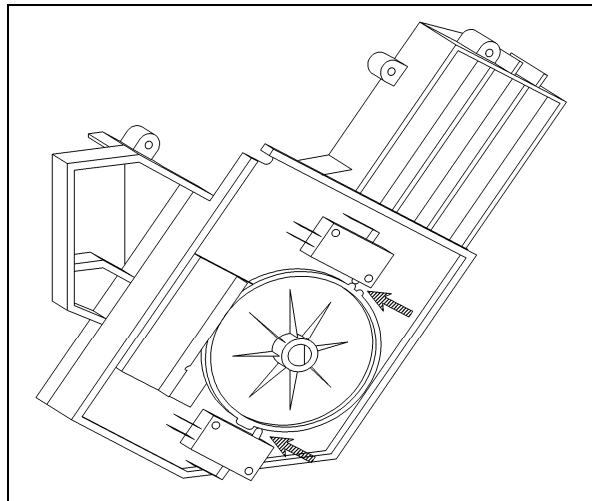


Figure 001-14: Home Position, Rear View

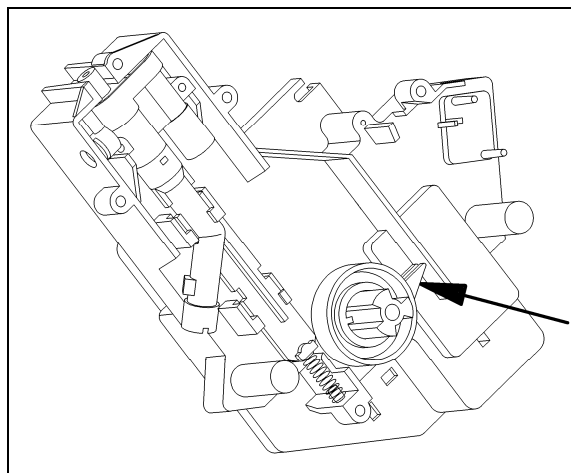
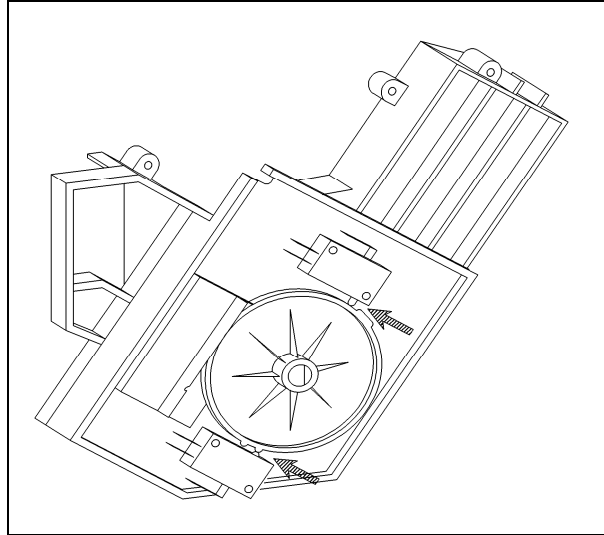
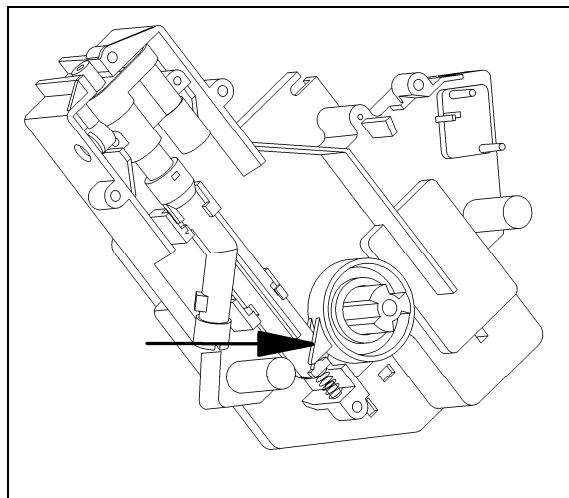


Figure 001-15: Home Position, Front View

2.3.4 Brew Unit Drive, Compressing Position (Brew Position)

The drive moves until the second cam of the double-cam element switches the bottom microswitch, and the top microswitch is no longer switched (Figure 001-16). The cam presses down on the spring (Figure 001-17) and closes the drain valve. The ground coffee is slightly compressed and brewed.

Technical Information**Figure 001-16: Compressing Position, Rear View****Figure 001-17: Compressing Position, Front View****2.3.5 Brew Unit Drive, Drain Position**

After the coffee is brewed, the drive moves back until the first cam of the double-cam element activates the bottom microswitch and the top microswitch is switched (Figures 001-18 and 001-19). The tension of the spring is released, the drain valve is opened, and the residual water runs into the drip tray before the coffee puck is dropped.

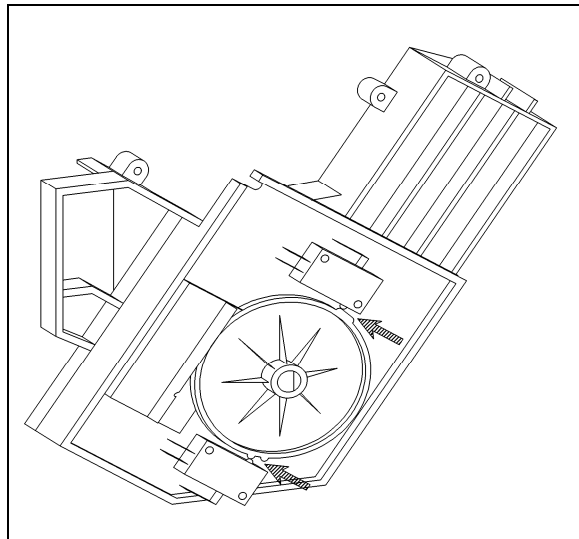


Figure 001-18: Drain Position, Rear View

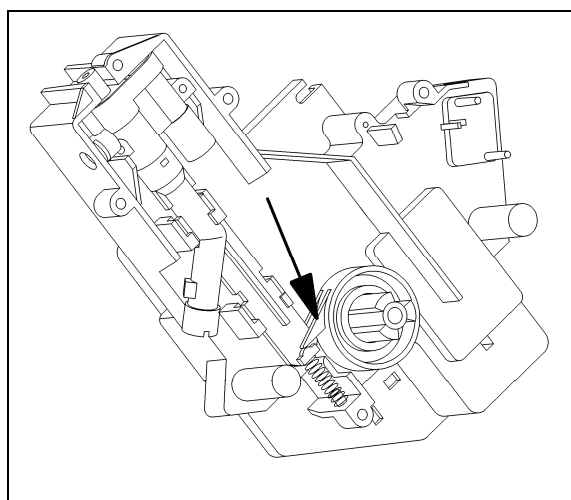


Figure 001-19: Drain Position, Front View

2.4 Waste-Container Monitoring

There are two situations where the “Empty waste container” message will be displayed.

- Number of pucks in waste container ≥ 15 .
- First puck was deposited in waste container > 48 h ago.

If one of these conditions is met, the “Empty waste container” message will be displayed. See also Section 001-3.31.

2.5 Machine Response after a Power Failure

After a power failure, the machine remains switched off (standby). The fault memory and all modifications made by the operator are saved.

2.6 Safety Concept for Water Intake (CVA 6x05 Only)

2 water inlet valves (1Y63, 2Y63):

These solenoids are connected in series in the water path. One solenoid is controlled

Technical Information

by the power electronic and one by the display electronic.

Power electronic (N1-1), display electronic (N1-2):

If one electronic is defective, the second solenoid will be closed by the other electronic.

Water container monitoring with 2 float switches (S12-1, S12-3):

The bottom float switch monitors the minimum level in the water container. The top float switch switches off the water inlet valves.

Water intake duration:

The water intake time is monitored. If the top float switch has not switched after 2 minutes, the water inlet valves are closed.

Drip tray/appliance base plate:

If the presence of water is registered by the drip tray contacts, the water inlet valves are closed.

3 Fault Repair

3.1 F001 -- Coffee/Hot Water NTC (R30-14) Short-Circuited

Symptom:

NTC temperature as registered by the electronic is $> 200^{\circ}\text{C}$ or the resistance is $<$ approx. 430Ω .

Cause:

Coffee/hot water NTC (R30-14) short-circuited.

Remedy:

1. Check the connection leads.
2. Replace the connection leads, if necessary.
3. Check the NTC via service mode. See Section 001-4.4.

Note:

The approximate resistance values of this NTC are

- $100\text{k}\Omega$ at 77°F (25°C),
- $5.5\text{k}\Omega$ at 212°F (100°C), and
- $1\text{k}\Omega$ at 320°F (160°C).

4. Check the resistance of the NTC at different temperatures and compare to the above values.
5. Replace the NTC, if necessary. See Section 001-4.9.

3.2 F002 -- Coffee/Hot Water NTC (R30-14) Open-Circuited

Symptom:

NTC temperature as registered by the electronic is $< -10^{\circ}\text{C}$ or the resistance is $>$ approx. $600\text{k}\Omega$.

Cause:

Ambient temperature below 10°C for a long period. With ambient temperatures less than 10°C , the resistance of the NTC increases to a value that is registered as an open circuit by the electronic module.

Remedy:**Note:**

The ambient temperature must be greater than 15°C for a long period and the appliance can then be used normally. Replacing the electronic module or NTC will not provide a remedy.

Cause:

Coffee/hot water NTC (R30-14) open-circuited.

Remedy:

1. Check the connection leads.
2. Replace the connection leads, if necessary.
3. Check the NTC via service mode. See Section 001-4.4.

Note:

The approximate resistance values of this NTC are

- 100kΩ at 77°F (25°C),
- 5.5kΩ at 212°F (100°C), and
- 1kΩ at 320°F (160°C).

4. Check the resistance of the NTC at different temperatures and compare to the above values.
5. Replace the NTC, if necessary. See Section 001-4.9.

3.3 F003 -- Steam NTC (R30-13) Short-Circuited**Symptom:**

NTC temperature as registered by the electronic is > 200°C or the resistance is < approx. 430Ω.

Cause:

Steam NTC (R30-13) short-circuited.

Remedy:

1. Check the connection leads.
2. Replace the connection leads, if necessary.
3. Check the NTC via service mode. See Section 001-4.4.

Note:

The approximate resistance values of this NTC are

- 100kΩ at 77°F (25°C),
- 5.5kΩ at 212°F (100°C), and
- 1kΩ at 320°F (160°C).

4. Check the resistance of the NTC at different temperatures and compare to the above values.
5. Replace the NTC, if necessary. See Section 001-4.9.

3.4 F004 -- Steam NTC (R30-13) Open-Circuited**Symptom:**

NTC temperature as registered by the electronic is < -10°C or the resistance is > approx. 600kΩ.

Technical Information**Cause:**

Ambient temperature below 10°C for a long period. With ambient temperatures less than 10°C, the resistance of the NTC increases to a value that is registered as an open circuit by the electronic module.

Remedy:**Note:**

The ambient temperature must be greater than 15°C for a long period and the appliance can then be used normally. Replacing the electronic module or NTC will not provide a remedy.

Cause:

Steam NTC (R30-13) open-circuited.

Remedy:

1. Check the connection leads.
2. Replace the connection leads, if necessary.
3. Check the NTC via service mode. See Section 001-4.4.

Note:

The approximate resistance values of this NTC are

- 100kΩ at 77°F (25°C),
- 5.5kΩ at 212°F (100°C), and
- 1kΩ at 320°F (160°C).

4. Check the resistance of the NTC at different temperatures and compare to the above values.
5. Replace the NTC, if necessary. See Section 001-4.9.

3.5 F010 -- No Water Intake**Symptom:**

The flow meter (B3-4) is not delivering any pulses within a 6-second interval.

Cause:

Water container inserted incorrectly.

Remedy:

Insert the water container correctly.

Cause:

The appliance has not been used for a long period. The pump is dry.

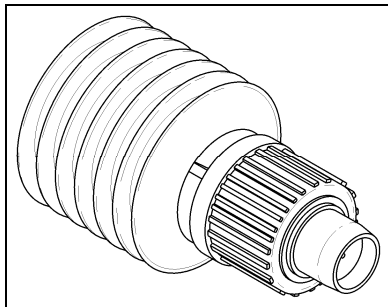


Figure 001-20: Pressure Pump

Remedy:

1. Remove the water tank.
2. Compress the pressure pump, Figure 001-20, and fill it with water.
3. Install the filled pressure pump on the connection for the water tank.

Note:

When checking the pump in service mode, hold a magnet over the door contact switch.

4. Activate the appliance pump in the service mode (see Section 001-4.4) and at the same time press water into the system via the pressure pump.

Cause:

Hose connections interrupted, blocked or kinked.

Remedy:

1. Check hose connections.
2. Replace hoses, if necessary.

Cause:

Water container valve jammed or clogged.

Remedy:

1. Check water container valve.
2. Replace water container, if necessary.

Cause:

Flow meter (B3-4) defective or clogged.

Remedy:

1. Check the flow meter in service mode (see Section 001-4.4).
2. Replace the flow meter, if necessary. See Section 001-4.30.

Cause:

Steam pump (M7-1) or coffee/hot-water pump (M7-2) defective.

Remedy:

1. Check both pumps in service mode; see Section 001-4.4.
2. Replace pump(s), if necessary. See Section 001-4.13.

Warning!

In order to avoid possible water system faults (e.g., clogging or blocking of valves), grease, oil or other slip lubricants should never be used when assembling and installing water system parts.

3.6 F017 -- Insufficient Water Intake

Symptom:

Less than one pulse at flow meter input within a 7-second interval.

Cause:

Water container inserted incorrectly.

Remedy:

Insert the water container correctly.

Cause:

The appliance has not been used for a long period. The pump is dry.

Remedy:

Technical Information

1. Remove the water tank.
2. Compress the pressure pump (see Figure 001-20) and fill it with water.
3. Install the filled pressure pump on the connection for the water tank.

Note:

When checking the pump in service mode, hold a magnet over the door contact switch.

4. Activate the appliance pump in the service mode (see Section 001-4.4) and at the same time press water into the system via the pressure pump.

Cause:

Hose connections interrupted, blocked or kinked.

Remedy:

1. Check hose connections.
2. Replace hoses, if necessary.

Cause:

Water container valve jammed or clogged.

Remedy:

1. Check water container valve.
2. Replace water container, if necessary.

Cause:

Flow meter (B3-4) defective or clogged.

Remedy:

1. Check the flow meter in service mode (see Section 001-4.4).
2. Replace the flow meter, if necessary. See Section 001-4.30.

Cause:

Steam pump (M7-1) or coffee/hot-water pump (M7-2) defective.

Remedy:

1. Check both pumps in service mode; see Section 001-4.4.
2. Replace pump(s), if necessary. See Section 001-4.13.

3.7 F028 -- Too Much Ground Coffee in Brew Unit**Symptom:**

When preparing beverages using ground coffee, the brew unit is not moving into the "Press" position; see Section 001-2.3.4. It can, however, move back to the reference position.

Cause:

Excessive ground coffee was taken in through the chute or there are coffee grounds in the brew unit.

Remedy:

1. Remove the ground coffee.
2. Advise the customer about correct dispensing amounts as outlined in the operating instructions.

3.8 F040 - Power Electronic EPL (N1-1) Fault**Symptom:**

Impermissible state registered at power electronic.

Cause:

Reset via power failure.

Remedy:

Switch the appliance off and back on.

3.9 F041 -- EEPROM Faulty/Data Fault**Symptom:**

Checksum at switch-on or when switching on out of standby mode triggers a fault.

Cause:

Fault while saving data (power failure during data storage). EEPROM defective.

Remedy:

Replace the power electronic. See Section 001-4.18.

3.10 F042 -- Line Frequency Not Registered**Symptom:**

No or insufficient zero-crossings (voltage) were calculated during a 6-second interval.

Cause:

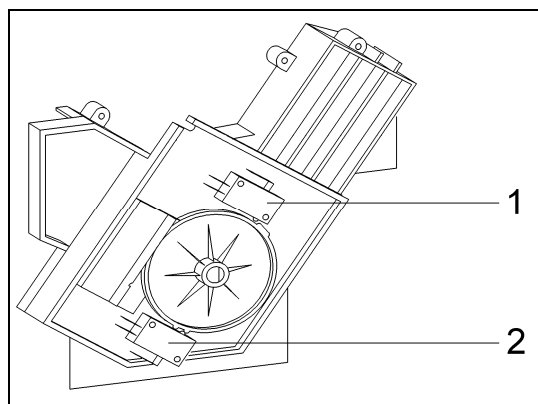
Frequency fluctuations or power-supply interference.

Remedy:

Replace the power electronic. See Section 001-4.18.

3.11 F073 -- Brew Unit Fault**Symptom:**

Brew unit doesn't move to the desired position within 6 seconds.



1 Brew unit position switch, top (S60-1)
2 Brew unit position switch, bottom (S60-2)

Figure 001-21: Brew Unit Position Switches

After the brew unit is activated, if one of the two microswitches has not been activated within approximately 10 seconds, fault code **F073** is indicated.

Cause:

Brew unit jammed.

Remedy:

1. Disconnect the appliance from the power supply.
2. Remove foreign objects.
3. Clean affected parts.

Technical Information**Cause:**

Brew unit drive defective.

Remedy:

Replace the brew unit drive. See Section 001-4.23.

Note:

When re-installing the brew unit drive, make sure that the cam is in the home position. See Section 001-2.3.3.

3.12 F074 -- Ceramic Valve (1M29) Fault**Symptom:**

Ceramic valve (1M29) is activated, but its position switch (1S60-3) does not detect a new position within 3 seconds.

Cause:

1. Ceramic valve (1M29) defective.
2. Ceramic valve position switch (1S60-3) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the position switch and ceramic valve in service mode; see Section 001-4.4.
4. If either the ceramic valve or its position switch is defective, then replace the ceramic valve. See Section 001-4.15.

3.13 F076 -- Brew Unit Compression Fault**Symptom:**

When preparing beverages using coffee beans, the brew unit is not moving into the "Press" position; see Section 001-2.3.4. It can, however, move back to the reference position.

Cause:

Grind amount too high or coffee grounds in brew unit.

Remedy:

Reduce the grind amount; see Section 001-4.1.

Cause:

Grind level too coarse.

Remedy:

Adjust the grind level to a finer setting.

3.14 F077 -- Ceramic Valve (1M29) Initialization Fault**Symptom:**

Ceramic valve step contact switch (1S51-1) not activated. During initialization, the reference contact is detected multiple times or not at all, OR when approaching or passing over the reference position the reference contact is not detected or is detected in an undefined position.

Cause:

Ceramic valve step contact switch (1S51-1) or ceramic valve (1M29) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Test the ceramic valve and step contact switch in the service mode; see Section 001-4.4.
4. Replace the ceramic valve, if necessary; refer to Section 001-4.15.

3.15 F080 -- Coffee/Hot-Water Heater (R1-2) Not Heating

Symptom:

Heater temperature not increasing during heat-up stage. Coffee heater (R1-2) is activated, but temperature increase is $< 1^{\circ}\text{C}$ within a 35-second interval. Temperature increasing too slowly within 1 second.

Cause:

Coffee heater NTC (R30-14) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the NTC in service mode; see Section 001-4.4.

Note:

The approximate resistance values of this NTC are

- $100\text{k}\Omega$ at 77°F (25°C),
- $5.5\text{k}\Omega$ at 212°F (100°C), and
- $1\text{k}\Omega$ at 320°F (160°C).

4. Check the resistance of the NTC at different temperatures and compare to the above values.
5. Replace the NTC, if necessary. See Section 001-4.9.

Cause:

Coffee/hot-water heater (R1-2) not heating. Temperature is lower than 60°C .

Remedy:

1. Test the coffee/hot-water heater in service mode. See Section 001-4.4.
2. Replace the heater, if necessary; see Section 001-4.9.

Cause:

Heater fuse (F8-2) has blown. An overshoot can blow the fuse on the heater.

Remedy:

Replace the fuse. See Section 001-4.9.

Note:

Because damage to the NTC cannot be ruled out, the coffee/hot-water heater NTC should also be replaced. See Section 001-4.9.

3.16 F081 -- Steam Heater (R1-1) Not Heating

Symptom:

Heater temperature not increasing during heat-up stage. Heater (R1-1) is activated, but temperature increase is $< 1^{\circ}\text{C}$ within a 35-second interval. Temperature increasing too slowly within 1 second.

Cause:

Technical Information

Steam heater NTC (R30-13) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the NTC in service mode; see Section 001-4.4.

Note:

The approximate resistance values of this NTC are

- 100k Ω at 77°F (25°C),
- 5.5k Ω at 212°F (100°C), and
- 1k Ω at 320°F (160°C).

4. Check the resistance of the NTC at different temperatures and compare to the above values.
5. Replace the NTC, if necessary. See Section 001-4.9.

Cause:

Steam heater (R1-1) not heating. Temperature is lower than 60°C.

Remedy:

1. Test the steam heater in service mode. See Section 001-4.4.
2. Replace the heater, if necessary; see Section 001-4.9.

Cause:

Heater fuse (F8-1) has blown. An overshoot can blow the fuse on the heater.

Remedy:

Replace the heater fuse and NTC (since the NTC may also be damaged); see Section 001-4.9.

3.17 F082 -- Coffee/Hot-Water Heater (R1-2) Overheating**Symptom:**

Heater temperature higher than 123°C for 120 s or longer.

Cause:

Coffee heater NTC (R30-14) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the NTC in service mode; see Section 001-4.4.

Note:

The approximate resistance values of this NTC are

- 100k Ω at 77°F (25°C),
- 5.5k Ω at 212°F (100°C), and
- 1k Ω at 320°F (160°C).

4. Check the resistance of the NTC at different temperatures and compare to the above values.
5. Replace the NTC, if necessary. See Section 001-4.9.

Technical Information

Note:

Because damage to the NTC cannot be ruled out, the coffee/hot-water heater NTC should also be replaced. See Section 001-4.9.

Cause:

Coffee/hot-water heater too hot. Temperature is higher than 130°C. An overshoot can cause the fuse to trip.

Remedy:

1. Replace the fuse; see Section 001-4.9.
2. Because premature damage cannot be ruled out, also replace the NTC; see Section 001-4.9.

3.18 F083 -- Steam Heater (R1-1) Overheating**Symptom:**

Heater temperature higher than 170°C for 120 s or longer.

Cause:

Steam heater NTC (R30-13) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the NTC in service mode; see Section 001-4.4.

Note:

The approximate resistance values of this NTC are

- 100kΩ at 77°F (25°C),
- 5.5kΩ at 212°F (100°C), and
- 1kΩ at 320°F (160°C).

4. Check the resistance of the NTC at different temperatures and compare to the above values.
5. Replace the NTC, if necessary. See Section 001-4.9.

Note:

Because damage to the NTC cannot be ruled out, the coffee/hot-water heater NTC should also be replaced. See Section 001-4.9.

Cause:

Steam heater too hot. Temperature is higher than 180°C. An overshoot can cause the fuse to trip.

Remedy:

1. Replace the fuse; see Section 001-4.9.
2. Because premature damage cannot be ruled out, also replace the NTC; see Section 001-4.9.

3.19 F094 -- Water Intake Fault (CVA 6x05 Only)**Symptom:**

Inlet valves (1Y63, 2Y63) are energized, but after 5 minutes the top switch in the water container (S12-3) has not yet switched.

Cause:

Technical Information

During commissioning, the appliance water intake shutoff valve was closed.

Remedy:

1. Open the shutoff valve.
2. Confirm the fault message with **OK**.

Cause:

Hose kinked.

Remedy:

Lay the hose so that it is not kinked.

Cause:

During water intake a large quantity of hot water has been dispensed. The top float in the water container has not switched within 5 minutes.

Remedy:

Confirm the fault message with **OK**.

Cause:

During water intake the drip tray has been emptied. The top float in the water container has not switched within 5 minutes.

Remedy:

Confirm the fault message with **OK**.

Cause:

During water intake the water container has been emptied. The top float in the water container has not switched within 5 minutes.

Remedy:

Confirm the fault message with **OK**.

Cause:

Inlet valves (1Y63, 2Y63) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the inlet valves in service mode; see Section 001-4.4.
4. Replace the inlet valves, if necessary; see Section 001-4.17.

3.20 F225 -- Ceramic Valve (2M29) Fault**Symptom:**

Ceramic valve (2M29) is activated, but its position switch (2S60-3) does not detect a new position within 3 seconds.

Cause:

Ceramic valve (2M29) or position switch (2S60-3) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the ceramic valve and position switch in service mode; see Section 001-4.4.
4. If either the ceramic valve or its position switch is defective, then replace the ceramic valve. See Section 001-4.16.

3.21 F226 -- Ceramic Valve (2M29) Initializing Fault**Symptom:**

Ceramic valve step contact switch (2S51-1) not activated. During initialization, the reference contact is detected multiple times or not at all, OR when approaching or passing over the reference position the reference contact is not detected or is detected in an undefined position.

Cause:

Ceramic valve (2M29) or step contact switch (2S51-1) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the ceramic valve and step contact switch in service mode; see Section 001-4.4.
4. If either the ceramic valve or its step contact switch is defective, then replace the ceramic valve. See Section 001-4.16.

3.22 F227 -- Cup-Edge Sensor (1B10) Short-Circuited**Symptom:**

The cup-edge sensor's output voltage as measured by the electronic is > approx. 3.43V.

Cause:

Cup-edge sensor (1B10) short-circuited.

Remedy:

1. Check wiring and plugs.
2. Replace defective wiring and/or plugs.
3. Check the sensor in service mode; see Section 001-4.4.
4. Replace the sensor if it is defective. See Section 001-4.38.

3.23 F228 -- Cup-Edge Sensor (1B10) Open-Circuited**Symptom:**

The cup-edge sensor's output voltage as measured by the electronic is < approx. 11mV.

Cause:

Cup-edge sensor (1B10) open-circuited.

Remedy:

1. Check wiring and plugs.
2. Replace defective wiring and/or plugs.
3. Check the sensor in service mode; see Section 001-4.4.
4. Replace the sensor if it is defective. See Section 001-4.38.

3.24 F229 -- Cup-Edge Sensor (2B10) Short-Circuited**Symptom:**

The cup-edge sensor's output voltage as measured by the electronic is > approx. 3.43V.

Cause:

Technical Information

Cup-edge sensor (2B10) short-circuited.

Remedy:

1. Check wiring and plugs.
2. Replace defective wiring and/or plugs.
3. Check the sensor in service mode; see Section 001-4.4.
4. Replace the sensor if it is defective. See Section 001-4.38.

3.25 F230 -- Cup-Edge Sensor (2B10) Open-Circuited**Symptom:**

The cup-edge sensor's output voltage as measured by the electronic is < approx. 11mV.

Cause:

Cup-edge sensor (1B10) open-circuited.

Remedy:

1. Check wiring and plugs.
2. Replace defective wiring and/or plugs.
3. Check the sensor in service mode; see Section 001-4.4.
4. Replace the sensor if it is defective. See Section 001-4.38.

3.26 F233 -- Cup Protection Switch (S86) Not Active**Symptom:**

Actuation of the reference/protection contact was not detected with upward initialization.

This fault can occur after switch-on, beverage preparation or a maintenance program.

Cause:

Cup protection switch (S86) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check the switch in service mode; see Section 001-4.4.
4. Replace the switch if it is defective. See Section 001-4.37.

Cause:

Dispenser is not moving all the way up.

When the dispenser adjustment motor (M19) is initialized, its wiring harness is blocking the dispenser from moving upward enough to activate the cup protection switch (S86).

Remedy:**Required components:**

1	Mat. no. 09818990	Dispenser (cup sensor) conversion kit, including instructions (mat. no. 09821142)
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1. On the new dispenser, make sure that the coffee hose is laid correctly (Figure 001-22, Item 1).
2. Install the new dispenser as outlined in the conversion instructions.

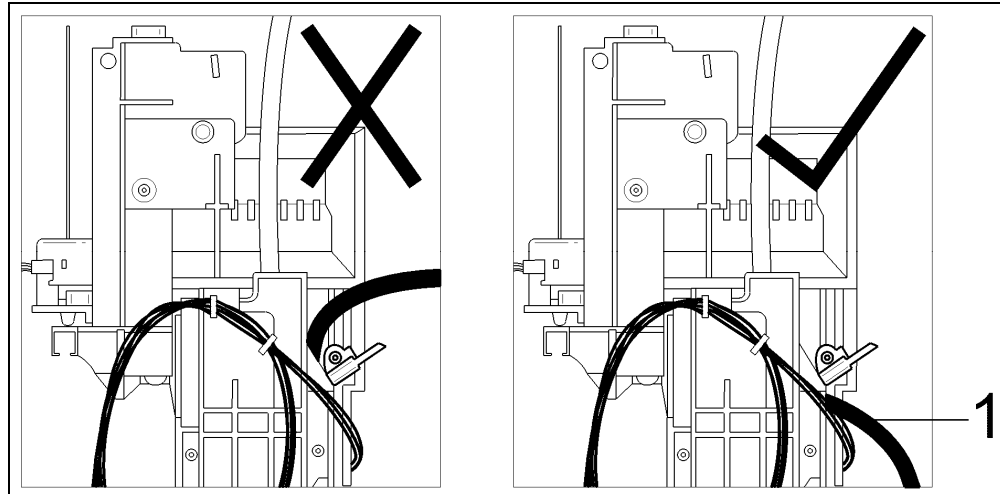


Figure 001-22: Coffee Hose Placement

Cause:

Cup protection switch not active.

Remedy:

1. Check wiring and plugs.
2. Replace defective wiring and/or plugs.
3. Check the switch in service mode; see Section 001-4.4.
4. Replace the switch if it is defective. See Section 001-4.37.

3.27 F234 -- Cup Protection Switch (S86) Was Activated

Symptom:

With 3 consecutive beverage preparations (without shutting off the appliance), the edge of the cup was not detected by the cup-edge sensors (1B10 / 2B10); instead, the cup protection switch (S86) is pressed when the dispenser moves downward.

Cause:

Cup positioned poorly.

Remedy:

Reposition cup.

Cause:

Plastic components behind the dispenser are heavily soiled.

Remedy:

Clean the plastic components behind the dispenser.

Cause:

Cup-edge sensor(s) (1B10 / 2B10) defective.

Remedy:

1. Check plugs and wires.
2. Replace defective plugs and wires.
3. Check both sensors in service mode; see Section 001-4.4.
4. Replace sensor(s), if defective. See Section 001-4.38.

Cause:

Cup protection switch was activated.

Remedy:

Technical Information**Note:**

The switch state can be displayed in service mode; see Section 001-4.4.

3.28 F235 -- Display Electronic EPB (N1-2) Communication Fault**Cause:**

Communication to display electronic EPB (N1-2) is faulty.

Remedy:

1. Check all wires and plugs. See Section 001-4.43 and the wiring diagram, as needed.
2. Replace any defective plugs or wiring.

3.29 F236 -- Auxiliary Electronic EPZ (N1-25) Communication Fault**Cause:**

Communication to auxiliary electronic EPZ (N1-25) is faulty.

Remedy:

1. Check all wires and plugs. See Section 001-4.42 and the wiring diagram, as needed.
2. Replace any defective plugs or wiring.

Note:

Because the power electronic communicates with the display electronic via the auxiliary electronic (see the wiring diagram for reference), any wiring problems with the auxiliary electronic will automatically make the power electronic think that there's also a communication fault with the display electronic, thereby triggering a concurrent F235 fault. If both F235 and F236 are stored in the fault memory, check the auxiliary electronic-power electronic connection (the 11-pin wiring harness) first and remedy as needed.

3.30 "X Servings until Descaling" Shown in Display**Cause:**

The maximum permitted flow of coffee/hot water or the maximum time for steam dispensing has been reached. The values monitored for this depend on the set water hardness. See Table C-4.

Remedy:

Descalcify the appliance; see the operating instructions.

3.31 "Empty Drip Tray" Message, Even Though Drip Tray Is Not Full**Cause:**

Water is flowing out of the brew unit and touching the contacts in the machine. The drip tray contacts are incorrectly sensing a "full drip tray".

Remedy:

Install the drip tray conversion kit (mat. no. 09763690) as per the instructions.

3.32 "Replace Drip Tray" Message, Even Though Drip Tray Is Inserted**Cause:**

Contact springs are dirty or covered with film (rinse aid from the dishwasher).

Remedy:

1. Shut off the appliance.
2. Remove and clean the drip tray.
3. Clean the contact springs using, e.g., isopropyl or rubbing alcohol.

3.33 “Empty Waste Container” Message, But Waste Container Is Not Full**Cause:**

If the waste container has not been emptied in the past 48 hours, the message **Empty waste container** will automatically appear.

Remedy:

No fault! Advise the customer of this automatic message.

Cause:

The waste container was emptied while the appliance was shut off. Emptying of the waste container was not registered by the electronic. After 48 hours the message **Empty waste container** will appear automatically.

Remedy:

No fault! Advise the customer of this automatic message.

3.34 ”Fill Milk Container” Message Not Displayed**Symptom:**

The electronic is not recognizing that the milk container is empty.

Cause:

The milk container lid was cleaned in a dishwasher. When the milk container lid is cleaned in a dishwasher, water will remain in the lid. This water electrically “connects” the milk container sensor blades. Therefore, the electronic thinks that the milk container is full.

Series modification:

1. The operating instructions have been modified.
2. The lid has been modified so that it can be better cleaned in a dishwasher.

Remedy:

1. Replace the milk container lid.
2. Advise the customer that the milk container lid should be cleaned by hand (see the operating instructions).

3.35 Built-In Depths Different**Symptom:**

If coffee machines are combined with other built-in units, they are positioned approx. 2mm deeper in the niche.

Cause:

Sealing strips missing. These coffee machines are suitable for building-in in housing units with integrated sealing strips. If these sealing strips are missing, the machine is seated 2mm deeper in the niche.

Remedy:

Install the adhesive strips kit (mat. no. 7716270).

Technical Information**Note:**

These adhesive strips replace the strips missing from the housing unit and ensure that machines are flush.

3.36 Door Jams when Opening**Cause:**

The coupling piece is not lubricated and jams in the brew unit. The coupling piece on the interior of the appliance door, Figure 001-23, has not been lubricated in accordance with the operating instructions. It jams in the brew unit.

Remedy:

1. Lubricate the coupling piece, Figure 001-23.
2. Advise the customer that the coupling piece must be lubricated in accordance with the operating instructions.

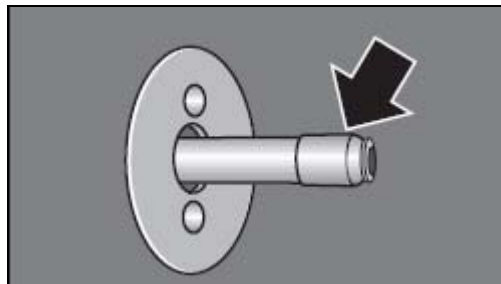


Figure 001-23: Coupling Piece on Inside of Door

3.37 Coffee or Espresso Too Cold**Cause:**

Machine settings.

Remedy:**Note:**

Measure the temperature half an inch (1 centimeter) below the dispenser, **not** in the cup. The temperature should be 187°F (± 3°F).

1. Pre-warm cups.
2. Set the temperature for coffee and espresso to maximum; see Section 001-4.1.
3. Set the grinding setting at least one level lower (finer).
4. Increase the grind (ground coffee) amount; see Section 001-4.1.
5. Activate pre-brewing; see Section 001-4.1.

Note:

Additional increase in brewing temperature will burn the coffee and ruin its taste.

3.38 Milk Froth Unsatisfactory or Sputtering**Cause:**

The milk pipework has not been cleaned sufficiently by the customer.

Remedy:

Technical Information

Advise the customer about the correct cleaning of the pipework in accordance with the operating instructions.

3.39 No or Very Little Coffee Flowing from Spout**Symptom:**

If the coffee/hot-water pump is operated in the service mode, it operates normally and pumps water.

Cause:

The coffee/hot-water pump does not create sufficient pressure for the brew unit.

Remedy:

Replace the coffee/hot-water pump. See Section 001-4.13.

3.40 Coffee Tastes Too Bitter**Symptom:**

The prepared coffee tastes too bitter or strong. After only a few servings of coffee have been prepared, there is a considerable quantity of wasted ground coffee next to the brew unit.

Cause:

The appliance has been set with extreme settings. The ground quantity compensation is at maximum.

Remedy:**Note:**

The change in grinding grade only takes full effect after several servings have been prepared.

1. Reduce the grinding grade by sliding the lever one to two settings to the right.
2. Reduce the ground quantity; see Section 001-4.1.
3. To ensure that the ground quantity compensation can set correctly, reset the appliance to standard settings; see Section 001-4.3.
4. If the problem occurs again, check the ground quantity switch contact; see Section 001-3.41.

3.41 Coffee Grounds Next to the Brew Unit**Symptom:**

After approximately 5 coffee servings, there is a large amount of coffee grounds next to the brew unit.

Cause:

The holder for the ground quantity step contact switch (Figure 001-24, Item 1) has broken off. The switch remains in the correct position but it moves during the brewing process. See the function description for grind amount compensation, Section 001-2.3.2.

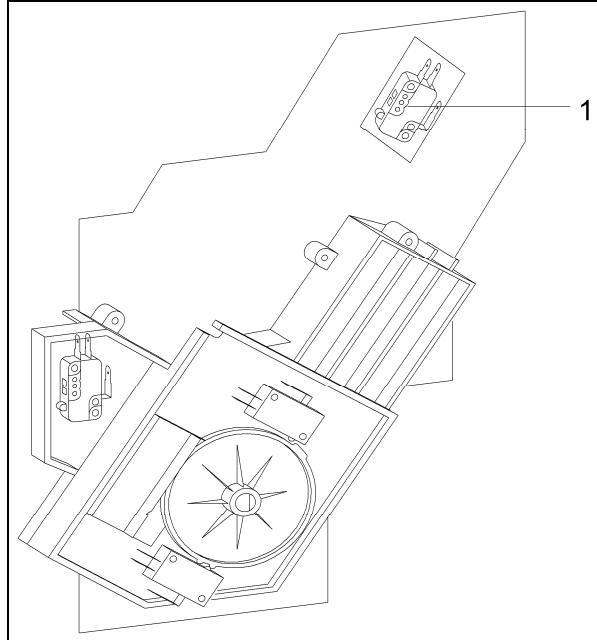
Technical Information

Figure 001-24: Ground Quantity Step Contact Switch

Remedy:

1. Replace the support plate.
2. Ensure that the plug is seated firmly.

Cause:

The grind amount compensation is set to maximum. The brew unit is overfilled.

Remedy:

1. Reduce the grind quantity; see Section 001-4.1.
2. To ensure that the grind quantity compensation can set correctly, reset the appliance to standard settings; see Section 001-4.3.

3.42 Coffee/Hot Water Pump or Steam Pump Inoperative

See Section 001-3.5 or 001-3.6.

3.43 Diagnostic Support Cannot Establish a Connection**Symptom:**

The connection cannot be made via the optical interface.

Cause:

Diagnostic support cannot be used with a machine logged onto RemoteVision.

Remedy:

3 remedies are possible:

1. Access the service mode, or
2. Briefly disconnect the machine from the power supply, or
3. Log off the machine from the RemoteVision system.

Subsequently, diagnostic support can be connected to the machine via the optical interface. RemoteVision cannot be used while this connection is in place.

Technical Information

To deactivate the optical interface again, depending on the selected remedy:

1. Quit the machine service mode, or
2. Briefly disconnect the machine from the power supply again, or
3. Log on the machine to the RemoteVision system.

After a maximum of 1 minute, the RemoteVision system can be used again.

3.44 Pump Running Constantly

Symptom:

At first use or after the appliance is switched on, the pump is constantly pumping water into the drip tray.

Cause:

There is a plastic fragment in the 3-part connector (in the direction of pump flow). Despite the obstruction, water flow is strong enough that no fault will be displayed (F10 or F17). Instead, it will take a long time for the flow meter to register sufficient pulses.

Remedy:

Replace the 3-part connector. See Figure 001-25.

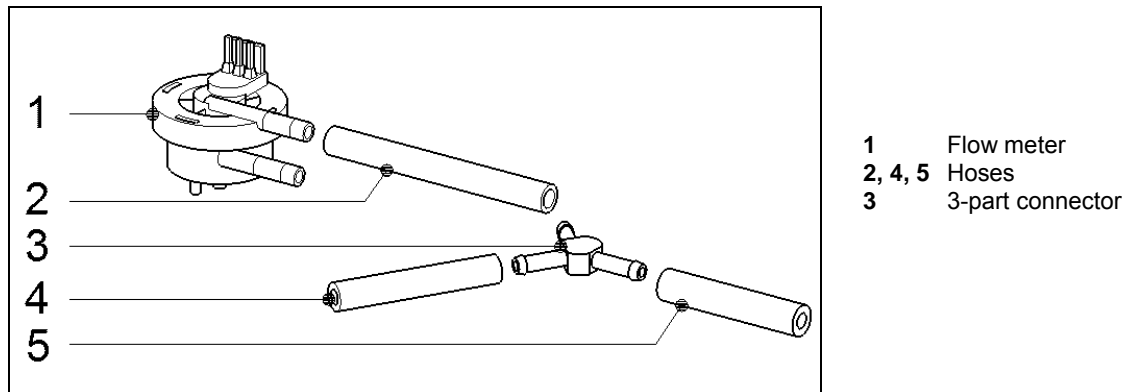


Figure 001-25: Three-Part Connector on Flow Meter

3.45 Milk Froth Stream is Inconsistent

Symptom:

During milk froth preparation, the milk froth stream is not constant.

Cause:

Software fault. Imprecise temperature control.

Series modification:

Software modification. All machines after index 12 have the improved software.

Remedy:

1. Update software.
2. For machines up to index 10, also install the new flow meter (mat. no. 09725380).

3.46 Empty Milk Container Not Detected

Symptom:

The electronic is not recognizing that the milk container is empty.

Cause:

The milk container lid was cleaned in a dishwasher. When the milk container lid is

Technical Information

cleaned in a dishwasher, water will remain in the lid. This water electrically “connects” the milk container sensor blades. Therefore, the electronic thinks that the milk container is full.

Series modification:

1. The operating instructions have been modified.
2. The lid has been modified so that it can be better cleaned in a dishwasher.


Remedy:

1. Replace the milk container lid.
2. Advise the customer that the milk container lid should be cleaned by hand (see the operating instructions).


4 Service**4.1 Drink Settings (Customer Programming)****4.1.1 CVA 640x****Initial requirements:**

Switch the appliance on.

Accessing:







Press the  touchpad.

Acknowledgement indicator:

The display shows the  **Parameter** menu.

Options:**Note:**

If no control is operated for 15 s, the display automatically goes back one level without saving.

1. Touch  or  until the desired drink is displayed.
2. Press **OK**.
3. Touch  or  until the desired function is marked.
4. Touch  or  until the desired setting is marked.

Technical Information

Function	Setting	Standard setting
Portion size	Espresso: 30 - 250 ml	35 ml for solo espresso; 60 ml with cappuccino or latte macchiato
	Coffee: 30 - 250 ml	125 ml
	Milk froth: 1 - 60 s	15 s with cappuccino or latte macchiato; 20 s for solo milk froth
	Hot milk: 1 - 80 s	20 s with cappuccino or latte macchiato; 35 s for solo hot milk
	Large coffee: 30 - 250 ml	160 ml
	Hot water: 30 - 250 ml	125 ml
Ground quantity setting (does not apply to milk froth, hot milk or hot water)	Level 1 (4.6 s grinding time)	Level 3
	Level 2 (5.2 s grinding time)	
	Level 3 (5.8 s grinding time)	
	Level 4 (6.4 s grinding time)	
	Level 5 (7.1 s grinding time)	
	Level 6 (7.6 s grinding time)	
	Level 7 (8.3 s grinding time)	
Brew temperature (does not apply to milk froth, hot milk or hot water)	Minimum (96°C)	Medium
	Low (98°C)	
	Medium (100°C)	
	High (102°C)	
	Maximum (104°C)	
Pre-brewing	Off	Off
	Short (1.5 s)	
	Long (3.0 s)	

Table 001-2: Drink Settings (Customer Programming), CVA 640x

Back (without saving):

Press the ↶ touchpad.

Save and quit:

1. Press the **OK** touchpad. The selected drink will be prepared.
2. Press the **OK** touchpad as soon as **Save** is shown and the desired portion size has been reached. The portion size is saved for all subsequent servings of the drink.
3. Press the ① touchpad. The machine is switched off.

Quit (without saving):

Press the ① touchpad. The machine is switched off.

4.1.2 CVA 680x

Initial requirements:

Switch the appliance on.

Accessing:

1. Press the **Main menu** touchpad.
2. Press the ☐ **Drinks** touchpad.
3. Press the **Change** touchpad.

Acknowledgement indicator:

Drink-size options are displayed.

Technical Information

Options:

Note:
If no touchpads are pressed for 15 s, the display will automatically go back one level.

To scroll, swipe a finger to the left or right across the display or press the < or > touchpad.


Function	Setting	Standard setting	
Portion size (press the Save touchpad as soon as it appears and the drink size is satisfactory; the drink size will be saved for all future preparations of that particular beverage)	Espresso: 30 - 250 ml	35 ml for solo espresso; 60 ml with cappuccino or latte macchiato	
	Coffee: 30 - 250 ml	125 ml	
	Milk froth: 1 - 60 s	15 s with cappuccino or latte macchiato; 20 s for solo milk froth	
	Hot milk: 1 - 80 s	20 s with cappuccino or latte macchiato; 35 s for solo hot milk	
	Large coffee: 30 - 250 ml	160 ml	
	Hot water: 30 - 250 ml	125 ml	
	Coffee jug: 3 cups (375 ml) to 8 cups (1000 ml)		3 cups: 375 ml
			4 cups: 500 ml
		5 cups: 625 ml	
		6 cups: 750 ml	
		7 cups: 875 ml	
Ground quantity setting (does not apply to milk froth, hot milk or hot water)	Level 1 (4.6 s grinding time)	Level 3	
	Level 2 (5.2 s grinding time)		
	Level 3 (5.8 s grinding time)		
	Level 4 (6.4 s grinding time)		
	Level 5 (7.1 s grinding time)		
	Level 6 (7.6 s grinding time)		
	Level 7 (8.3 s grinding time)		
Brew temperature (does not apply to milk froth, hot milk or hot water)	Minimum (96°C)	Medium	
	Low (98°C)		
	Medium (100°C)		
	High (102°C)		
	Maximum (104°C)		
Pre-brewing	Off	Off	
	Short (1.5 s)		
	Long (3.0 s)		
Reset drinks to factory settings	Yes: All customer drink settings (except for profile settings) are restored to their factory defaults.		
	No: All customer drink settings remain unchanged and will not be restored to their factory settings.		

Table 001-3: Drink Settings (Customer Programming), CVA 680x

Back (without saving):
Press the **Back** touchpad.

Save and quit:

Technical Information

1. Press the **OK** touchpad. The selected drink will be prepared.
2. Press the  touchpad. The machine is switched off.

Quit (without saving):

Press the  touchpad. The machine is switched off.


4.2 Machine Settings (Customer Programming)

4.2.1 CVA 640x

Initial requirements:

Switch the appliance on.

Accessing:

Press the  touchpad.


Acknowledgement indicator:

The display shows the **Settings** menu.





Options:

Note:

If no control is operated for 15 s, the display automatically goes back one level without saving.



If the language setting is incorrect, follow the  symbol to access the language function.

The language setting remains as selected even if standard settings are reset.

1. Touch  or  until the desired function is displayed.
2. Press **OK**.
3. Touch  or  until the desired setting is marked.

Function	Setting	Standard setting	
Language	Bahasa malaysia (Malaysian)		
	cestina (Czech)		
	dansk (Danish)		
	deutsch (German)	Deutschland (Germany)	
		Luxemburg (Luxembourg)	
		Österreich (Austria)	
		Schweiz (Switzerland)	
	english	Australia	
		United Kingdom	
		Hong Kong	
		India	
		Ireland	
		Canada	
		Mexico	
		New Zealand	
		Singapore	
South Africa			
USA			

Technical Information

Function	Setting	Standard setting	
Language	espanol (Spanish)	Chile	
		México	
		España (Spain)	
		EE UU (USA)	
	francais (French)	Belgique (Belgium)	
		France	
		Canada	
		Luxembourg	
		Suisse (Switzerland)	
	hrvatski (Croatian)		
	italiano (Italian)	Italia (Italy)	
		Svizzera (Switzerland)	
	magyar (Hungarian)		
	nederlands (Dutch)	Belgien (Belgium)	
		Nederland (the Netherlands)	
	norsk (Norwegian)		
	polski (Polish)		
	português (Portuguese)		
	Română (Romanian)		
	Slovenčina (Slovak)		
	Slovenščina (Slovene)		
	Srpski (Serbian)		
	suomi (Finnish)		
	svenska (Swedish)		
	türkçe (Turkish)		
	griechisch (Greek)		
	russisch (Russian)	Russia	
		Kazachstan	
		Latvia	
		Lithuania	
	Estonia		
ukrainisch (Ukranian)			
arabic			
chinesisch (Chinese)	China		
	Hong Kong		
Japanese			
Persian			
Time	Display	On (time of day is shown constantly)	Off
		Off (time of day is not shown when the appliance is switched off)	
		Night dimming (time of day is not shown between 11 pm and 5 am when the appliance is switched off)	
Time format	24 h (time displayed in 24 h clock format)	24 h	
	12 h (time displayed in 12 h clock format)		
Set	Current time of day can be set		
Date	Set the date with the  and  touchpads.		

Technical Information

Function	Setting		Standard setting	
Timer (select Timer 1 or Timer 2)	Set	Switch on at (if the timer is activated, the appliance will switch on at the set time on the selected days)		
		Switch off after (the appliance will switch off after the set time has elapsed) ¹	00:15 to 09:00 [h:min]	
		Switch off at (if the timer is activated, the appliance will switch off at the set time on the selected days)		
	Day of the week	Monday to Sunday	Mark the desired days and accept them.	
		Accept		
	Activate	Switch on at	Mark the desired setting and accept it. The timer is activated.	
Switch off at				
Accept				
Eco mode	On	Steam heater activated only occasionally	On	
	Off	Steam heater constantly activated		
Lighting	Brightness	Machine switched on	Level 0 to 7 (Level 0 = Lighting switched off)	Level 4
		Machine switched off	Level 0 to 7	Level 0
	Switch off after	00:00 to 06:00 [h:min]	The light will switch off after the set time has elapsed.	00:15 [h:min]
Info	No. of drinks	Coffee drinks total	The number of serving cycles carried out is displayed.	
		Total number of servings		
		Espresso		
		Coffee		
		Cappuccino		
		Latte Macchiato		
		Large coffee		
		Caffè latte		
		Hot milk		
		Milk froth		
Hot water				

Technical Information

Function	Setting			Standard setting
Info	Number of servings until	Descaling	The number of servings until descaling is required is displayed.	
		Degreasing the brew unit	The number of servings until brew unit degreasing is required is displayed.	
System lock <input type="checkbox"/>	On		System lock is switched on. The machine can be safeguarded against accidental switch-on.	Off
	Off		System lock is switched off.	
Water hardness ^{2,3}	Soft (0 - 4 grains per gallon)			Very hard
	Medium (5 - 9 grains per gallon)			
	Hard (10 - 18 grains per gallon)			
	Very hard (> 18 grains per gallon)			
Display brightness	Level 1 to 7	Darker to brighter		Level 4
Volume	Buzzer tones	Level 0 – 7	Level 0 = Switched off	Level 7
	Keypad tones	Level 0 – 7		Level 7
Plumbed water connection	On			
	Off			
Showroom program	On	The demonstration mode has been activated. The appliance can be operated but heating will not take place.		Off
	Off	The demonstration mode is deactivated. Heating will take place.		
Factory default	Do not reset	All modifications made by the customer will not be reset to standard settings.		
	Reset	All modifications (except the language setting) will be reset to standard settings. The showroom program remains unchanged. Settings made in service programming mode and in service mode remain unchanged.		

Table 001-4: Machine Settings (Customer Programming), CVA 640x

¹ Only available with Timer 1.

² To prevent limescale buildup in the flow-through heater, descaling must be carried out more frequently with hard water.

³ The set water hardness will affect when “50 servings until descaling” is displayed; see Table C-4.

Back (without saving):

Press the ↩ touchpad.

Save and quit:

1. Press the **OK** touchpad. The setting is saved.
2. Press the Ⓛ touchpad. The machine is switched off.

Quit (without saving):

Press the Ⓛ touchpad. The machine is switched off.

4.2.2 CVA 680x**Initial requirements:**

Switch the appliance on.

Accessing:


1. Press the **Main menu** touchpad.
2. Press the  **Settings** touchpad.

Acknowledgement indicator:

Customer programming options are displayed.

Options:**Note:**

If no touchpads are pressed for 15 s, the display will automatically go back one level.

If the language setting is incorrect, follow the  symbol to access the language function.

The language setting remains as selected even if standard settings are reset.

1. To scroll, swipe a finger to the left or right across the display or press the < or > touchpad.
2. Press the touchpad for the desired function.

Function	Setting	Standard setting	
Language	Bahasa malaysia (Malaysian)		
	cestina (Czech)		
	dansk (Danish)		
	deutsch (German)		Deutschland (Germany)
			Luxemburg (Luxembourg)
			Österreich (Austria)
			Schweiz (Switzerland)
	english		Australia
			United Kingdom
			Hong Kong
			India
			Ireland
			Canada
			Mexico
			New Zealand
			Singapore
South Africa			
USA			

Technical Information

Function	Setting	Standard setting	
Language	español (Spanish)	Chile	
		México	
		España (Spain)	
		EE UU (USA)	
	français (French)	Belgique (Belgium)	
		France	
		Canada	
		Luxembourg	
		Suisse (Switzerland)	
	hrvatski (Croatian)		
	italiano (Italian)	Italia (Italy)	
		Svizzera (Switzerland)	
	magyar (Hungarian)		
	nederlands (Dutch)	Belgien (Belgium)	
		Nederland (the Netherlands)	
	norsk (Norwegian)		
	polski (Polish)		
	português (Portuguese)		
	Română (Romanian)		
	Slovenčina (Slovak)		
	Slovenščina (Slovene)		
	Srpski (Serbian)		
	suomi (Finnish)		
	svenska (Swedish)		
	türkçe (Turkish)		
	griechisch (Greek)		
	russisch (Russian)	Russia	
		Kazachstan	
		Latvia	
		Lithuania	
		Estonia	
	ukrainisch (Ukrainian)		
arabic			
chinesisch (Chinese)	China		
	Hong Kong		
Japanese			
Persian			
Time	Display	On (time of day is shown constantly)	Off
		Off (time of day is not shown when the appliance is switched off)	
		Night dimming (time of day is not shown between 11 pm and 5 am when the appliance is switched off)	
	Time format	24 h (time displayed in 24 h clock format)	24 h
12 h (time displayed in 12 h clock format)			
Set	Current time of day can be set		

Technical Information

Function	Setting		Standard setting	
Date	Set the date with the ∇ and \blacktriangle touchpads.			
Timer (select Timer 1 or Timer 2)	Set	Switch on at (if the timer is activated, the appliance will switch on at the set time on the selected days)		
		Switch off after (the appliance will switch off after the set time has elapsed) ¹	00:15 to 09:00 [h:min]	
		Switch off at (if the timer is activated, the appliance will switch off at the set time on the selected days)		
	Day of the week	Monday to Sunday	Mark the desired days and accept them.	
		Accept		
	Activate	Switch on at	Mark the desired setting and accept it. The timer is activated.	
Switch off at				
Accept				
Eco mode	On	Steam heater activated only occasionally	On	
	Off	Steam heater constantly activated		
Lighting	Brightness	Machine switched on	Level 0 to 7 (Level 0 = Lighting switched off)	
		Machine switched off	Level 0 to 7	
	Switch off after	00:00 to 06:00 [h:min]	The light will switch off after the set time has elapsed.	00:15 [h:min]
Info	No. of drinks	Coffee drinks total	The number of serving cycles carried out is displayed.	
		Total number of servings		
		Espresso		
		Coffee		
		Cappuccino		
		Latte Macchiato		
		Large coffee		
		Caffè latte		
		Hot milk		
		Milk froth		
Hot water				

Technical Information

Function	Setting			Standard setting
Info	Number of servings until	Descaling	The number of servings until descaling is required is displayed.	
		Degreasing the brew unit	The number of servings until brew unit degreasing is required is displayed.	
System lock <input type="checkbox"/>	On		System lock is switched on. The machine can be safeguarded against accidental switch-on.	Off
	Off		System lock is switched off.	
Water hardness ^{2, 3}	Soft (0 - 4 grains per gallon)			Very hard
	Medium (5 - 9 grains per gallon)			
	Hard (10 - 18 grains per gallon)			
	Very hard (> 18 grains per gallon)			
Display brightness	Level 1 to 7	Darker to brighter		Level 4
Volume	Buzzer tones	Level 0 – 7	Level 0 = Switched off	Level 7
	Keypad tones	Level 0 – 7		Level 7
Plumbed water connection	On			On
	Off			
Dispenser adjustment	On	Dispenser adjustment is switched on.		On
	Off	Dispenser adjustment is switched off.		
Showroom program	On	The demonstration mode has been activated. The appliance can be operated but heating will not take place.		Off
	Off	The demonstration mode is deactivated. Heating will take place.		
Factory default	Do not reset	All modifications made by the customer will not be reset to standard settings.		
	Reset	All modifications (except the language setting) will be reset to standard settings. The showroom program remains unchanged. Settings made in service programming mode and in service mode remain unchanged.		

Table 001-5: Machine Settings (Customer Programming), CVA 680x

¹ Only available with Timer 1.


² To prevent limescale buildup in the flow-through heater, descaling must be carried out more frequently with hard water.

³ The set water hardness will affect when “50 servings until descaling” is displayed; see Table C-4.

Back (without saving):

Press the **Back** touchpad.

Save and quit:

1. Press the **OK** touchpad. The setting is saved.
2. Press the  touchpad. The machine is switched off.

Quit (without saving):

Press the  touchpad. The machine is switched off.


4.3 Service Programming Mode

4.3.1 CVA 640x

Initial requirements:

Switch the appliance off.

Accessing:

1. Press and hold **Profile**.
2. Press  once.
3. Release **Profile**.
4. Press **Profile** again 5 times; hold on the 5th time until the programming mode is displayed.

Note:

Access has to be completed within two seconds.








Acknowledgement indicator:

Programming mode is displayed, along with the service programming functions.

Options:

Note:

If no touchpad is pressed for 15 s, the display automatically goes back one level without saving.

1. Touch  or  to scroll to the desired programming function (see Table 001-6). Press **OK** to select the function.
2. After selecting a function, touch  or  to scroll to the desired option. See Table 001-6. Press **OK** to select the option.
3. To go back to the previous menu, touch  or  until **Back**  is marked.
4. Press **OK**.

Function	Options		Description
Reset	Cancel		Reset is not carried out.
	Carry out a reset		All modified settings will be reset to standard settings. The language remains unchanged. The showroom program remains unchanged. The fault memory remains unchanged.
Appliance type	Plumbed water connection	Available	Model with plumbed water connection (CVA 6405)
		Not available	Model without plumbed water connection (CVA 6401)

Technical Information

Function	Options		Description
Appliance type	Warming drawer	Available	Model with connected warming drawer
		Not available	Model without connected warming drawer
Restart	Cancel		Restart not carried out.
	Restart		A restart is equivalent to a break in power supply. All settings remain unchanged. The showroom program remains unchanged. The fault memory remains unchanged.
Descalce ¹	Do not reset		Descaling counter is not reset.
	Reset		Descaling counter is reset. The lock is lifted.
Degrease the brew unit	Do not reset		Degreasing counter is not reset.
	Reset		Degreasing counter is reset.
Clean milk system	Do not reset		Cleaning counter is not reset.
	Reset		Cleaning counter is reset. The lock is lifted.

Table 001-6: Service Programming Settings, CVA 640x

¹ To avoid damage to the appliance, the machine should be descaled after service work has been completed.

Back (without saving):

Press the ↶ touchpad.

Save and quit:

1. Press the **OK** touchpad. All settings are saved.
2. Press the ⏻ touchpad. The machine is switched off.

Quit (without saving):

Press the ⏻ touchpad. The machine is switched off.

4.3.2 CVA 680x

Initial requirements:

Switch the appliance off.

Accessing:

1. Press and hold the **Back** touchpad.
2. Press ⏻ once.
3. Release **Back**.
4. Press **Back** again 5 times; hold on the 5th time until the programming mode is displayed.

Note:

Access has to be completed within two seconds.

Acknowledgement indicator:

Programming mode and the programming functions are displayed.

Options:**Note:**

If no touchpad is pressed for 15 s, the display automatically goes back one level without saving.

Function	Options	Description	
Reset	Reset & restore all settings?	Yes	All modified settings will be reset to standard settings. The language remains unchanged. The showroom program remains unchanged. The fault memory remains unchanged.
		No	Reset is not carried out.
Service	Appliance type	Main water connection (Present/Not present)	
		Plate warmer (Present/Not present)	
	Descal ¹	Reset descaling program? (Yes/No)	Descaling counter is/is not reset (if reset, the lock will be lifted).
	Degrease the brew unit	Reset brew unit degrease settings? (Yes/No)	Degreasing counter is/is not reset.
	Clean the milk pipework	Reset milk pipework cleaning setting? (Yes/No)	Cleaning counter is/is not reset.


Table 001-7: Service Programming Settings, CVA 680x

¹ To avoid damage to the appliance, the machine should be descaled after service work has been completed.

Back (without saving):

Press the **Back** touchpad.

Save and quit:

1. Press the **OK** touchpad. All settings are saved.
2. Press the  touchpad. The machine is switched off.


4.4 Service Mode

4.4.1 CVA 640x

Initial requirements:

Switch the appliance off.

Accessing:

1. Press and hold **Profile**.
2. Press  once.
3. Release **Profile**.
4. Press **Profile** again 3 times; hold on the 3rd time until service mode is displayed.

Technical Information

Note:
Access has to be completed within two seconds.

Acknowledgement indicator:
Service mode is displayed, along with the service functions.

Options:

Note:
If no touchpad is pressed for 15 s, the display automatically goes back one level without saving.

Touch ∇ or \wedge to scroll to the desired service function (see Table 001-8). Press **OK** to select the function.

Function	Displays		Description
Software version	EPB	e.g. ID 02983 V1	ID number and version of the auxiliary electronic EPB (N1-2)
	EPL	e.g. ID 02984 V1	ID number and version of the power electronic EPL (N1-1)
	LNG	e.g. 4774	N/A
	EPZ	e.g. 02882 V1	ID number and version of the display module EPZ (N1-25)
Fault memory	OK		All logged faults are shown.
	Delete	Cancel	Fault memory is not deleted.
		Delete	Fault memory is deleted.
Component	H3 (serving-area light)	On	
		Off	
	1M29 (ceramic valve)	Initialize	The ceramic valve is moved through its positions and then back to the home position. To avoid mechanical damage, always initialize as a last step.
		Step counterclockwise	The ceramic valve is moved counterclockwise.
		Step clockwise	The ceramic valve is moved clockwise.
		Continuous counterclockwise	The ceramic valve is moved continuously counterclockwise. Press OK to stop.
		Continuous clockwise	The ceramic valve is moved continuously clockwise. Press OK to stop.
		Position 1	The ceramic valve is stepped to the appropriate position.
		Position 2	
		Position 3	
		Position 4	
		Position 5	
	Position 6		
	Position 7		
Position 8			
2M29 (ceramic valve 2)	Same as 1M29 above		

Technical Information

Function	Displays		Description
Component	M26 (brew unit drive) ¹	Initialization	The brew unit is passed through all its positions and finishes at the rest position.
		Continuously upwards	The brew unit is advanced to the top end setting.
		Continuously downwards	The brew unit is advanced to the bottom end setting.
		Rest position	The brew unit is advanced to the appropriate position.
		Drain position	
		Compression position	
	M25 (grinder)	On, off	
	M7-2 (coffee/hot-water pump)	Phase chopping	Flow meter displays 22 pulses per second
		Pulse package	Flow meter displays 5 pulses per second
		Continuously	The pump is activated continuously (flow meter displays 26 pulses per second)
	M7-1 (steam pump)	Same as M7-2 above	
	Empty the system	Empty the water container or remove it from the appliance.	
	R2 (coffee/hot-water heater) ³	OK	R30-14 (coffee/hot-water heater NTC) reading is displayed
		Press OK to activate	If the temperature rises, the flow-through heater is in order.
		Press OK again to deactivate	
	R1 (steam heater) ³	OK	R30-13 (steam heater NTC) reading is displayed
		Press OK to activate	If the temperature rises, the flow-through heater is in order.
		Press OK again to deactivate	
	K1-80 (warming-drawer relay)	On, off	
	1Y63 / 2Y63 (intake valve)	On, off	
	M24 (milk valve) ¹	Initialization	The milk valve is stepped through its positions; press OK .
		Hot milk position	The milk valve is stepped to the appropriate position. Press OK to start/stop activation.
		Hot milk latte position	
Milk froth position			
Rinsing position			
Priming position			
Container rinsing position			
Milk valve care position			

Technical Information

Function	Displays		Description	
Component	M28 (air valve) ¹	Initialization	The air valve is stepped through its positions.	
		Open position	The air valve is stepped to the appropriate position.	
		Closed position		
		Priming position		
Sensor	R30-14 value (coffee/hot-water heater NTC)		The temperature in the coffee/hot-water heater is displayed.	
	R30-13 value (steam heater NTC)		The temperature in the steam heater is displayed.	
	B3-4 value (flow meter)		The number of pulses per second provided by the flow meter is displayed.	
Switch status	S12-2 (drip tray monitor switch)	0	Not installed	
		1	Installed	
	S24 (door contact switch)	0	Closed	
		1	Open	
	S12-1/S12-3 (water tank level switches)		See Table 001-9.	
	1B3-14 (beans container sensor)	0	Not installed or installed and empty	
		1	Installed and full	
	S60-1/S60-2 (brew unit position switch)		See Table 001-10.	
	S87-2 (brew unit present switch)	0	Installed and locked	
		1	Not installed or installed and not locked	
	S51-4 (ground quantity step contact switch)	0	Activated	
		1	Not activated	
	S87-5 (coffee chute monitor switch)	0	Closed	
		1	Open	
	S87-4 (waste container present switch)	0	Installed	
		1	Not installed	
	S12-4 (milk container level sensor)	0	Installed and not empty	
		1	Not installed or installed and empty	
	1S51-1 (ceramic valve 1 step contact switch)	0	Activated	
		1	Not activated	
	1S51-2 (ceramic valve 2 step contact switch)	0	Activated	
		1	Not activated	
	1S60-3 (ceramic valve 1 positioning switch)	0	Activated	
		1	Not activated	
	2S60-3 (ceramic valve 2 positioning switch)	0	Activated	
		1	Not activated	
	S87-6 (spout monitor switch)	0	Not installed	
		1	Installed	

Technical Information














Function	Displays		Description
Total operating hours	The total number of operating hours is displayed.		
Operation	Display	Press OK to start or stop activation	The display and the drink touchpads light up.
	Display backlight		The display text lights up.
	Buzzer		The audible signal sounds.
	(Touch-) sensors (press the touchpad to be tested; the number of the touchpad sensor is displayed)		Sensor 102 pressed
			Sensor 103 pressed
			Sensor 107 pressed
			Sensor 108 pressed
			Sensor 82 pressed
			Sensor 65 pressed
	(Touch-) sensors (press the touchpad to be tested; the number of the touchpad sensor is displayed)		Sensor 26 pressed
			Sensor 66 pressed
			Sensor 16 pressed (press the touchpad briefly)
			Sensor 104 pressed
			Sensor 69 pressed
		Sensor 67 pressed	
		Sensor 68 pressed	

Table 001-8: Service Mode, CVA 640x

¹ In order to avoid mechanical damage, always carry out initialization as the final step.

² In order to avoid damage to the water-carrying parts, before storage or transport, particularly in winter, always drain the system.

³ Activate the flow-through heater only briefly to prevent it from becoming too hot and melting the fuse.

Switch state		Water tank state	Fill level	
S12/1 (water tank level switch, minimum)	S12-3 (water tank level switch, maximum)		Top float switch	Bottom float switch
0	0	Installed and full	Activated	Activated
0	1	Installed and full	Not activated	Activated
1	1	Installed and empty	Not activated	Not activated
1	0	Not installed	-	-

Table 001-9: S12-1/S12-3

Switch state ¹				Brew unit position
S60-1 (brew unit position switch, top)		S60-2 (brew unit position switch, bottom)		
0	Activated	1	Not activated	Rest; see Section 001-2.3.3
1	Not activated	0	Activated	Compressing; see Section 001-2.3.4
0	Activated	0	Activated	Drainage; see Section 001-2.3.5

Table 001-10: S60-1/S60-2

¹ Advance the brew unit in the service mode to the appropriate position (see Section 001-4.4) and compare the switch states.

Technical Information

Go back (without saving):

Press the ↶ touchpad.

Quit:

Press the ⏻ touchpad. The machine is switched off.

4.4.2 CVA 680x

Initial requirements:

Switch the appliance off.

Accessing:

1. Press and hold the **Back** touchpad.
2. Press ⏻ once.
3. Release **Back**.
4. Press **Back** again 3 times; hold on the 3rd time until service mode is displayed.

Note:
Access has to be completed within two seconds.

Acknowledgement indicator:

Service and the service menu are displayed.

Options:

Note:
If no touchpad is pressed for 15 s, the display automatically goes back one level without saving.

Touch ∨ or ∧ to scroll to the desired service function (see Table 001-11). Press **OK** to select the function.

Function	Displays		Description
Software version	EPB	e.g., ID2881 V9	ID number and version of the display electronic EPB (N1-2)
	ELP	e.g., ID2984 V1	ID number and version of the power electronic EPL (N1-1)
	LNG	e.g., ID4941	N/A
	EPZ	e.g., ID2882 V1	ID number and version of the additional electronic EPZ (N1-25)
	FLASH		N/A
Fault memory	OK		All logged faults are shown.
	Delete	Cancel	Fault memory is not deleted.
		Delete	Fault memory is deleted.
Component	H3 (serving-area light)	On	
		Off	
	1M29 (ceramic valve)	Initialize	The ceramic valve is moved through its positions and then back to the home position. To avoid mechanical damage, always initialize as a last step.

Technical Information

Function	Displays		Description
Component	1M29 (ceramic valve)	Step counterclockwise	The ceramic valve is moved counterclockwise.
		Step clockwise	The ceramic valve is moved clockwise.
		Continuous counterclockwise	The ceramic valve is moved continuously counterclockwise. Press OK to stop.
		Continuous clockwise	The ceramic valve is moved continuously clockwise. Press OK to stop.
		Position 1	The ceramic valve is stepped to the appropriate position.
		Position 2	
		Position 3	
		Position 4	
		Position 5	
	Position 6		
	Position 7		
	Position 8		
	2M29 (ceramic valve 2)	Same as 1M29 above	
	M26 (brew unit drive) ¹	Initialization	The brew unit is passed through all its positions and finishes at the rest position.
		Continuously upwards	The brew unit is advanced to the top end setting.
		Continuously downwards	The brew unit is advanced to the bottom end setting.
		Rest position	The brew unit is advanced to the appropriate position.
		Drain position	
	Compression position		
	M25 (grinder)	On, off	
	M7-2 (coffee/hot-water pump)	Phase chopping	Flow meter displays 22 pulses per second
		Pulse package	Flow meter displays 5 pulses per second
		Continuously	The pump is activated continuously (flow meter displays 26 pulses per second)
	M7-1 (steam pump)	Same as M7-2 above	
	R2-1 (coffee/hot-water heater) ³	OK	R30-14 (coffee/hot-water heater NTC) reading is displayed
		Press OK to activate	If the temperature rises, the flow-through heater is in order.
		Press OK again to deactivate	
	R1-1 (steam heater) ³	OK	R30-13 (steam heater NTC) reading is displayed
		Press OK to activate	If the temperature rises, the flow-through heater is in order.
		Press OK again to deactivate	
	K1-80 (warming-drawer relay)	On, off	

Technical Information

Function	Displays		Description
Component	1Y63 / 2Y63 (intake valve)	On, off	
	M19 (dispenser adjustment motor)	Initialize	Dispenser is moved upward and then into the basic position.
		Continuous top	Dispenser moved to the end (top) position.
		Continuous bottom	Dispenser moved to the bottom position.
		Basic	Dispenser moved to the basic position.
		Logo	Dispenser moved to the position where the Miele logo can be clearly seen.
		Service	Dispenser moved to the position where the dispensing cover can be removed.
		Dispense	Dispenser moved to the dispensing position.
	M24 (milk valve) ¹	Initialization	The milk valve is stepped through its positions; press OK .
		Hot milk position	The milk valve is stepped to the appropriate position. Press OK to start/stop activation.
		Hot milk/latte position	
		Milk froth position	
		Rinsing position	
		Priming position	
		Container rinsing position	
		Milk valve care position	
	M28 (air valve) ¹	Initialization	
		Open position	The air valve is stepped to the appropriate position.
		Closed position	
		Priming position	
	Sensor values	R30-14 value (coffee/hot-water heater NTC)	
R30-13 value (steam heater NTC)		The temperature in the steam heater is displayed.	
1B10 (cup-edge sensor)			
2B10 (cup-edge sensor)			
B3-4 value (flow meter)		The number of pulses per second provided by the flow meter is displayed.	
S12-2 (drip tray monitor switch)		0	Not installed
		1	Installed

Technical Information

Function	Displays		Description
Switch status	S24 (door contact switch)	0	Closed
		1	Open
	1B3-14/2B3-14 (beans container sensors)	0	Not installed or installed and empty
		1	Installed and full or not installed
	S60-1 (brew unit position switch)	See Table 001-10.	
	S60-2 (brew unit position switch)	See Table 001-10.	
	S87-2 (brew unit present switch)	0	Installed and locked
		1	Not installed or installed and not locked
	S51-4 (ground quantity step contact switch)	0	Activated
		1	Not activated
	S87-5 (coffee chute monitor switch)	0	Closed
		1	Open
	S87-4 (waste container present switch)	0	Installed
		1	Not installed
	S12-1/S12-3 (water tank level switches)	See Table 001-9.	
	S12-4 (milk container level sensor)	0	Installed and not empty
		1	Not installed or installed & empty
	1S51-1 (ceramic valve 1 step contact switch)	0	Activated
		1	Not activated
	1S51-2 (ceramic valve 2 step contact switch)	0	Activated
		1	Not activated
	1S60-3 (ceramic valve 1 positioning switch)	0	Activated
		1	Not activated
	2S60-3 (ceramic valve 2 positioning switch)	0	Activated
		1	Not activated
	S87-6 (spout monitor switch)	0	Not installed
		1	Installed
	S86 (cup protection switch)	0	Not installed
1		Installed	
Total operating hours	The total number of operating hours is displayed.		
Operation	Display backlight	Press OK to start or stop activation	The display and the drink touchpads light up.
	Loudspeaker		The display text lights up. A test melody will be played.
	Touch Reaction	Swipe a finger across the display.	
	Sensors	Press the touchpad to be tested.	A tone will sound.
Exit			

Table 001-11: Service Mode, CVA 680x

Technical Information

- ¹ In order to avoid mechanical damage, always carry out initialization as the final step.
- ² In order to avoid damage to the water-carrying parts, before storage or transport, particularly in winter, always drain the system.
- ³ Activate the heater only briefly to prevent it from becoming too hot and melting the fuse.

4.5 Removing the Appliance from a Cabinet

1. Turn off the water supply (CVA 6x05).
2. Disconnect the appliance from power.
3. Open the door.
4. Remove the containers and drip tray.
5. Remove the four retaining screws (Figure 001-26, Item 1).

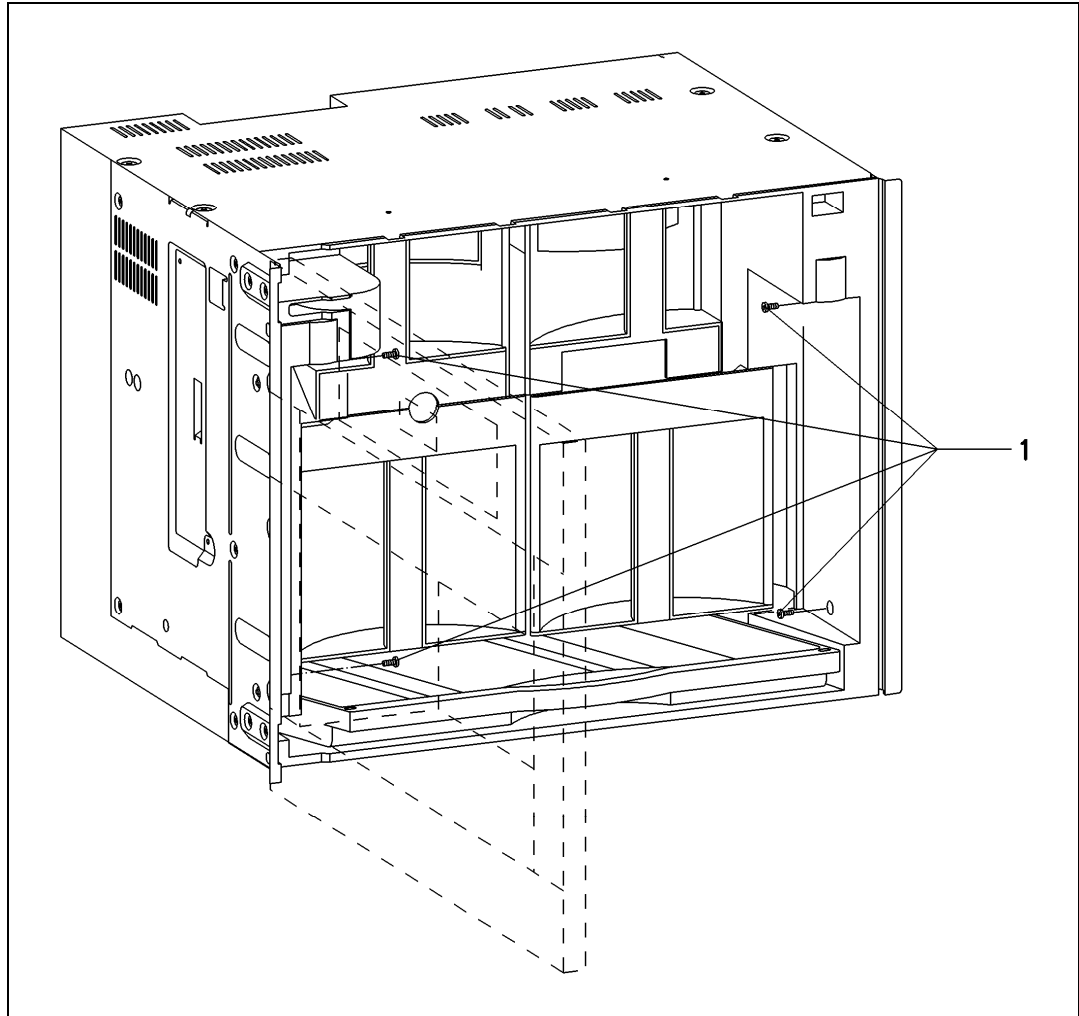


Figure 001-26: Removing the Appliance from a Cabinet

6. Slide the appliance out of its cabinet.
7. Disconnect the appliance from the water supply (CVA 6405).
8. Disconnect the power connections.

4.6 Top Rear Panel Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.

Technical Information

2. Remove the top cover screws (four T10s and four T20s).
3. Remove the top cover.
4. Remove the four screws securing the top rear panel (two T10s and two T20s). See Figure 001-27.

Note:

There is an additional screw on the left side of the top rear panel that is not shown in the illustration below.

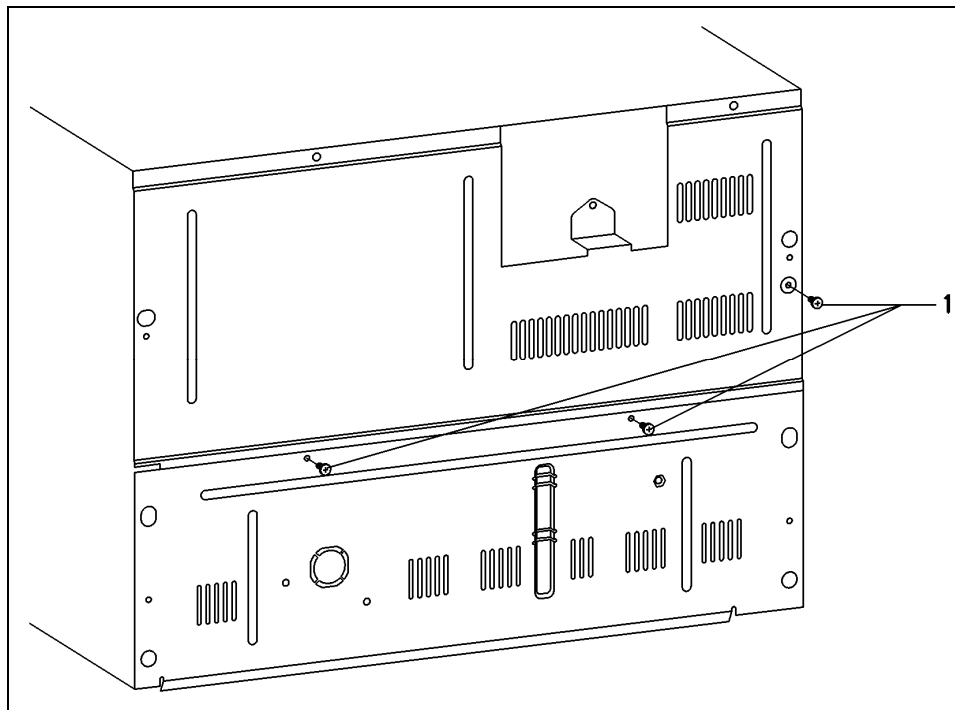


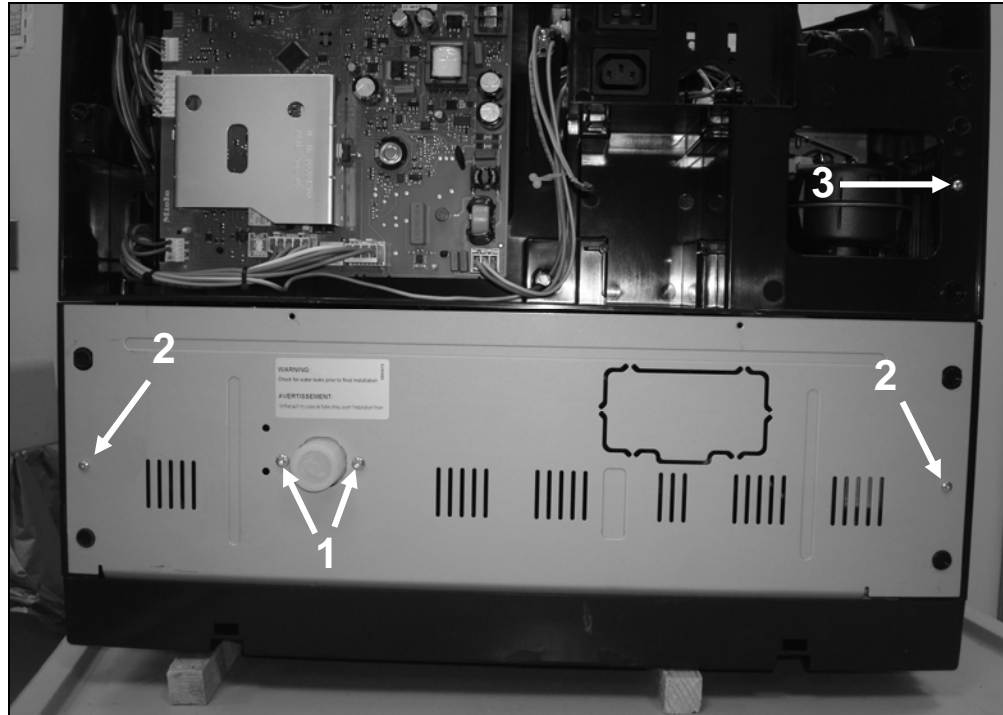
Figure 001-27: Top Rear Panel Removal

5. Take off the top rear panel and use needlenose pliers to disconnect the ground wire.

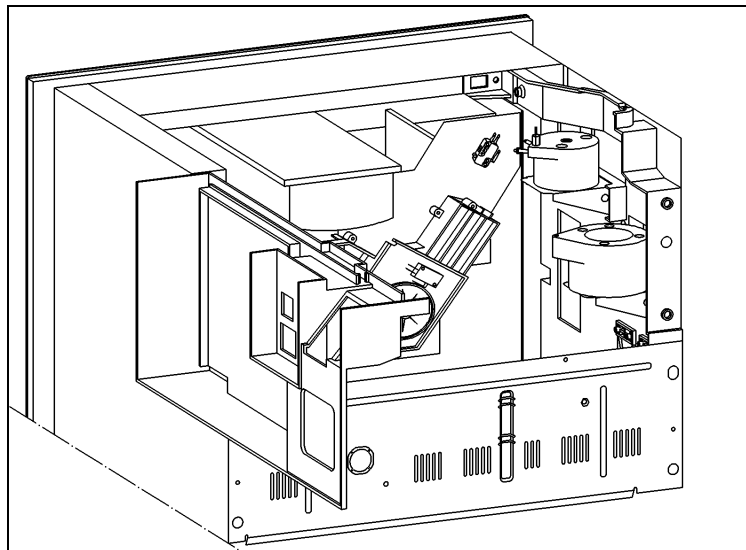
4.7**Bottom Rear Panel Removal**

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the two T10 screws securing the inlet valve mounting bracket to the bottom rear panel (CVA 6x05 only). See Figure 001-28, Item 1.
4. Remove the two T10 screws securing the sides of the bottom rear panel (Figure 001-28, Item 2) and take off the panel.

Technical Information

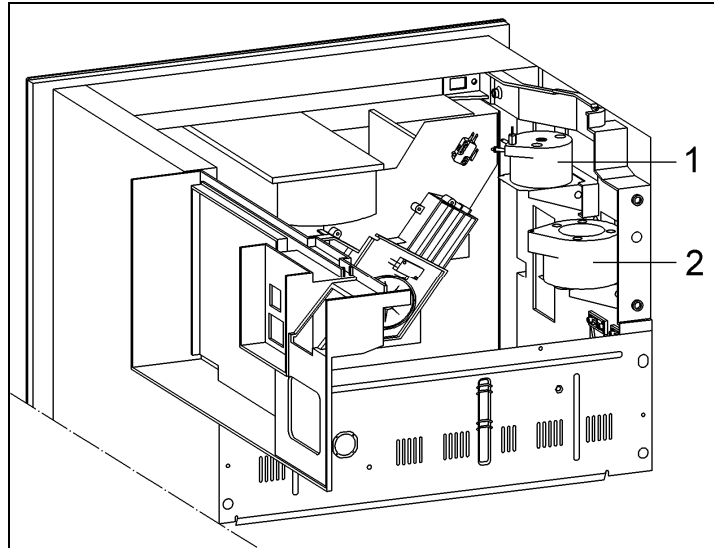
**Figure 001-28:** Bottom Rear Panel and Service Door Screws**4.8****Preparing Machine for Servicing**

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the T10 screw securing the right side of the service door. See Figure 001-28, Item 3.
4. Remove the connection cable between the auxiliary electronic and the power board from its guide.
5. Open the service door. See Figure 001-29.

**Figure 001-29:** Service Door, Open

4.9 Heater (Steam R1-1 or Coffee/Hot-Water R1-2) Removal

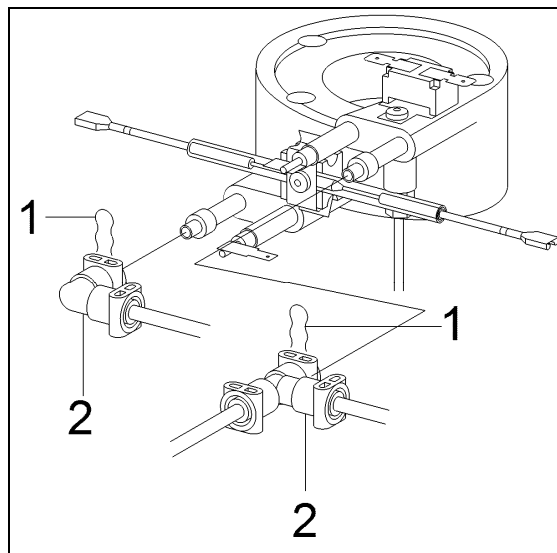
1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Prepare the machine for servicing; see Section 001-4.8.



- 1 Steam heater
2 Coffee/hot-water heater

Figure 001-30: Service Door Open, Showing Heaters

4. Remove the T20 screw securing the appropriate heater assembly (shown at Figure 001-32, Item 1).
5. Release the horseshoe clip holding the two halves of the heater housing together.
6. Separate the housing from the heater and carefully pull off the plastic bottom support.
7. Remove the spring clips from the water line connections (Figure 001-31, Items 1 and 2).



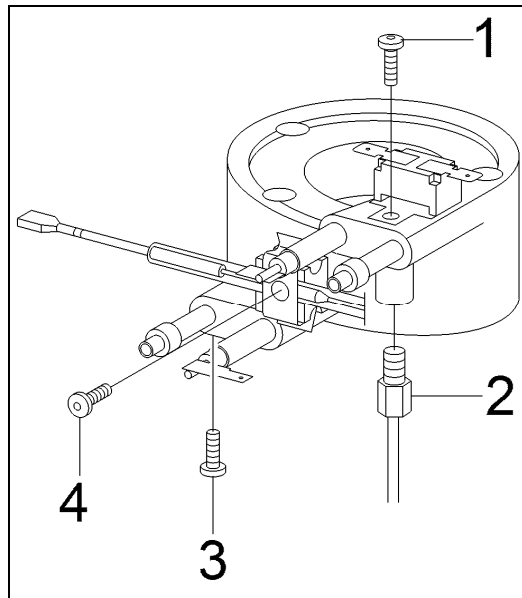
- 1 Spring clips
2 Water line connections

Figure 001-31: Heater Water Line Connections

8. Unscrew the NTC (Figure 001-32, Item 2).
9. Remove the fuse screw (Figure 001-32, Item 4) and the fuse.

Technical Information

10. Remove the ground screw (Figure 001-32, Item 3) and the ground wire.
11. Disconnect all other electrical connections from the heater.



- 1 Heater screw (T20)
- 2 NTC
- 3 Ground screw (T20)
- 4 Fuse screw (T20)

Figure 001-32: Heater Assembly

Warning!

Important for reassembly:

To prevent damage to the NTC or heater, do not secure the NTC too tightly. There should be a gap of approx. 0.5mm between the NTC and the heater.

4.10 Heater NTC (Steam R30-13 or Coffee/Hot-Water R30-14) Removal

See Section 001-4.9.

4.11 Heater Temperature Limiter (Steam F1-5 or Coffee/Hot-Water F1-8) Removal

See Section 001-4.9.

4.12 Heater Fuse (Steam F8-1 or Coffee/Hot-Water F8-2) Removal

See Section 001-4.9.

4.13 Pump (Steam M7-1 or Coffee/Hot-Water M7-2) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the bottom rear panel; see Section 001-4.7.
4. Prepare the machine for servicing; see Section 001-4.8.
5. Remove the spring clip from the Teflon hose connection at the top of the appropriate pump and disconnect the Teflon hose.
6. Disconnect the pump's electrical connection.
7. Remove the two T10 screws securing each of the pump's metal mounting brackets (top and bottom). These brackets are not shown in the below illustration but the screw locations are shown at Figure 001-33, Item 1.

Technical Information

8. Remove the pump from the appliance.
9. Disconnect the silicone hose from the bottom of the pump (arrow, Figure 001-33).
10. Disconnect the wiring from the temperature limiter (Figure 001-33, Item 2).
11. Insert small needlenose pliers into one side of the temperature limiter's retaining clip (see arrows at Figure 001-33, Item 2); pull forward to release. Repeat with the other side of the clip.
12. Slide the temperature limiter out of its notch in the pump.
13. Pull off the pump rubber brackets (top and bottom).

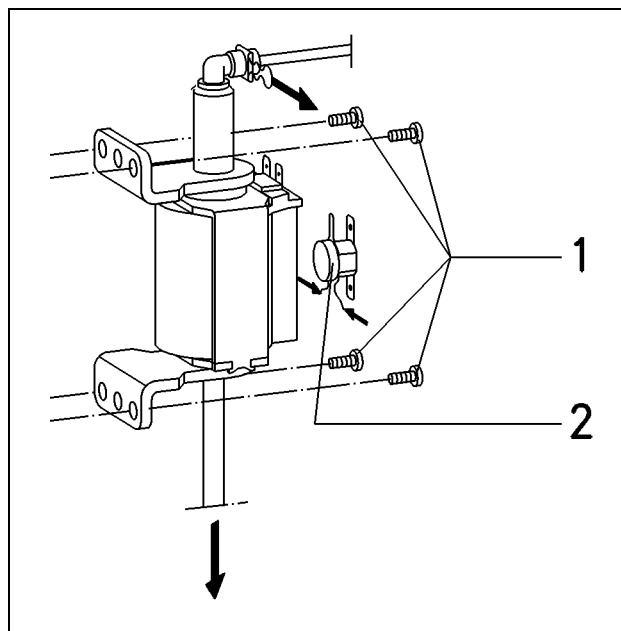


Figure 001-33: Pump Assembly

Warning!

In order to avoid possible water system faults (e.g., clogging or blocking of valves), grease, oil or other slip lubricants should never be used when assembling and installing water system parts.

4.14 Pump Temperature Limiter (Steam F3-1 or Coffee/Hot-Water F3-2) Removal

See Section 001-4.13.

4.15 Ceramic Valve 1M29 Removal

Note:

Ceramic valve 1M29 is the one that is installed upside down.

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the bottom rear panel; see Section 001-4.7.
4. Prepare the machine for servicing; see Section 001-4.8.
5. Remove the three spring clips securing the water lines at the front and side of the valve; disconnect the three water lines from the valve.
6. Disconnect the electrical connection at the top of the valve.

Technical Information

7. Remove the two black T10 screws securing the valve to the outside of the left side panel.
8. Pull the valve out of the appliance.
9. Disconnect the two spring clips securing the water lines at the back of the valve, and disconnect the two water lines from the valve.

4.16 Ceramic Valve 2M29 Removal**Note:**

Ceramic valve 2M29 is the one that is installed right side up.

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the bottom rear panel; see Section 001-4.7.
4. Prepare the machine for servicing; see Section 001-4.8.
5. Remove the four screws (three T10s and one T20) securing the left side access panel; take off the panel.
6. Pull the valve out through the side of the appliance.
7. Remove the five spring clips securing the water lines to the valve; disconnect all five water lines.
8. Disconnect the drain hose from the valve.
9. Disconnect the electrical connection from the valve.
10. Push the retaining tab on the valve's black plastic mounting bracket away from the valve, and slide the bracket down and off of the valve.

4.17 Inlet Valve Removal (CVA 6x05 Only)

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the bottom rear panel; see Section 001-4.7.
4. Disconnect the electrical connections from the inlet valve assembly.
5. Unscrew the intake hose from the inlet valve assembly.

4.18 EPL Power Electronic (N1-1) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Disconnect all electrical connections from the power electronic.
4. Release the electronic's retainers (four) using needlenose pliers. See Figure 001-34.
5. Remove the power electronic from the appliance.

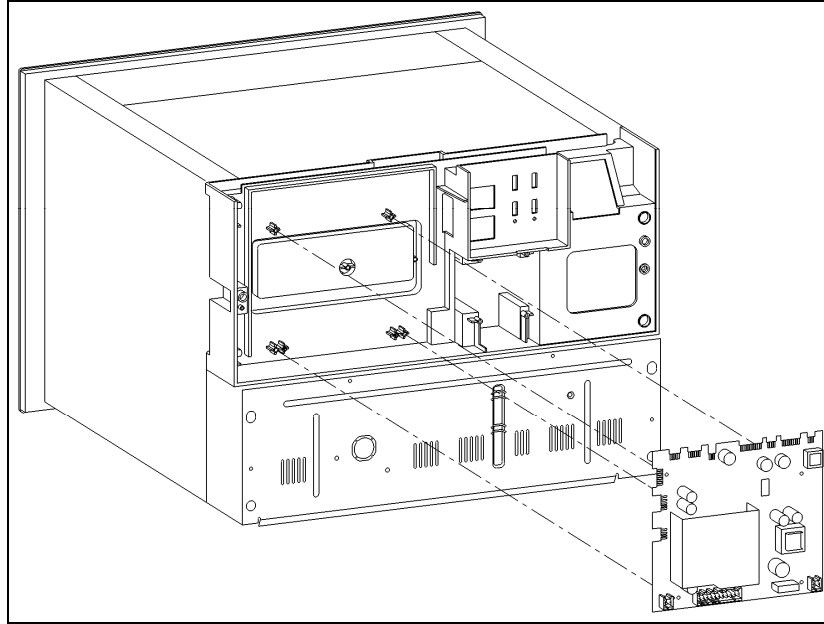


Figure 001-34: EPL Power Electronic (N1-1) Removal

4.19 Coffee Chute Monitor Switch (S87-5) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Prepare the machine for servicing; see Section 001-4.8.
3. Open the appliance door.
4. Take out all of the containers.
5. Pull off the grinding-grade adjustment handle. See Figure 001-35.

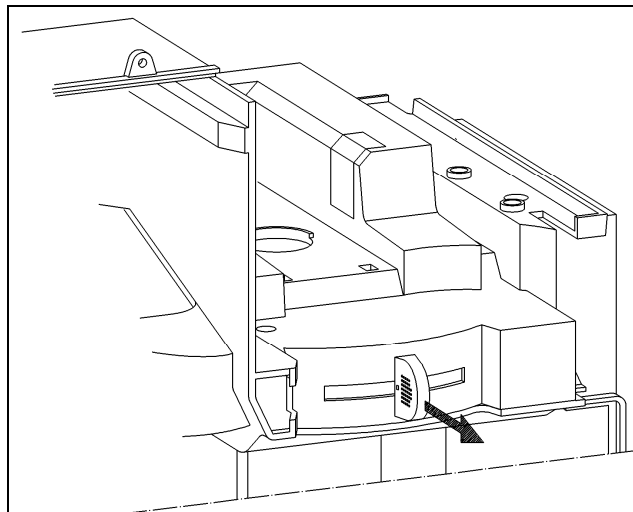
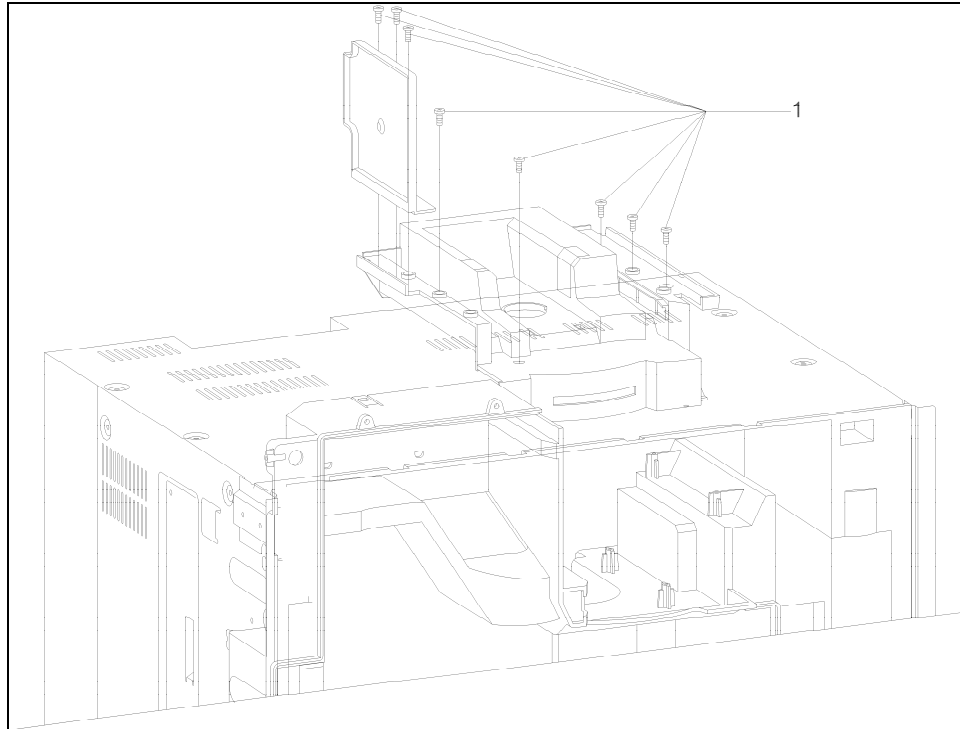


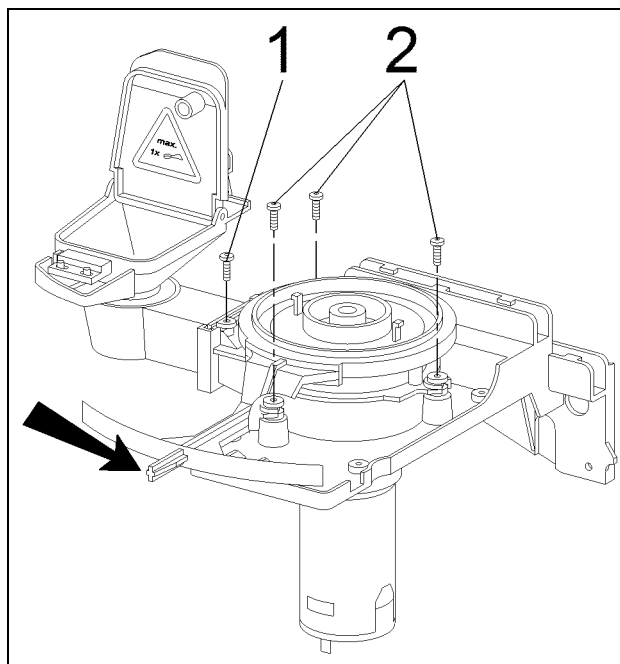
Figure 001-35: Adjustment Lever Handle

6. Remove the T10 screws securing the beans container guide. See Figure 001-36, Item 1.

Technical Information

**Figure 001-36:** Bean Container Guide Retaining Screws

7. Remove the beans container guide.
8. Slide the grinding-grade adjustment lever all the way to the right (arrow, Figure 001-37).
9. Remove the three T10 screws securing the grinder (Figure 001-37, Item 2).

**Figure 001-37:** Grinder Screws

Technical Information

10. Remove the T10 screw securing the side of the chute to the grinder (Figure 001-38, Item 1).
11. Remove the screw securing the back of the chute (Figure 001-38, Item 2).
12. Pull the chute out from the rear of the housing.
13. Disconnect the wiring harness.
14. Release the coffee chute monitor switch (Figure 001-38, Item 3) from the chute.

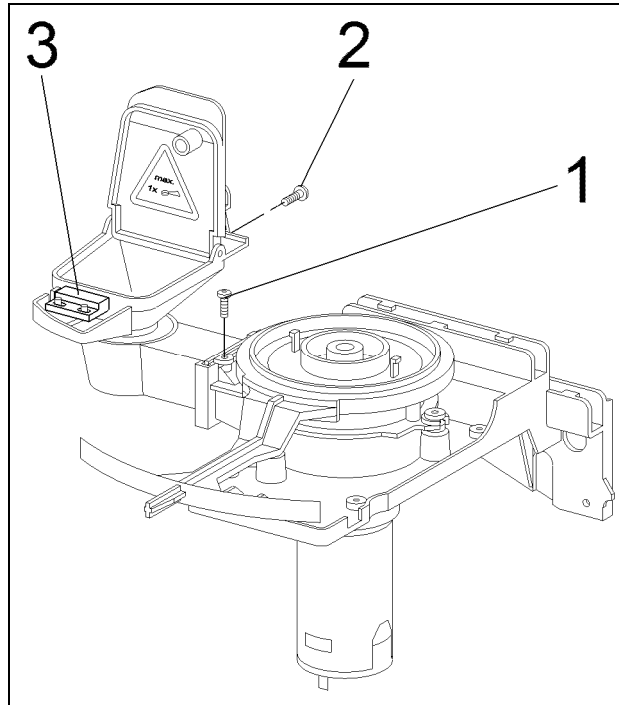
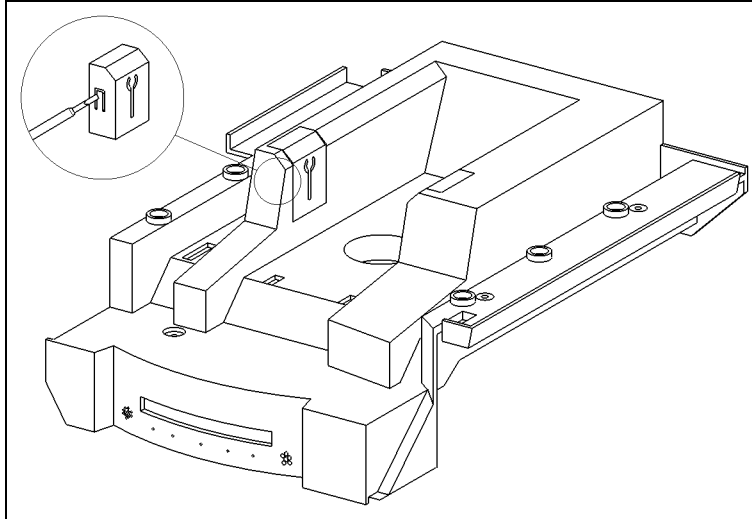


Figure 001-38: Chute Monitor Switch and Screws

4.20 Beans Container Sensor (1B3-14, 2B3-14) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Prepare the machine for servicing; see Section 001-4.8.
3. Open the appliance door.
4. Take out the beans container.
5. Pull off the grinding-grade adjustment handle. See Figure 001-35.
6. Remove the T10 screws securing the beans container guide. See Figure 001-36, Item 1.
7. Remove the beans container guide and disconnect the four-pin wiring harness.
8. Turn the beans container guide upside down.
9. Using a small flathead screwdriver, press in on the retainers on the sides of each sensor housing (Figure 001-39).
10. Slide the sensor housings out of the beans container guide.
11. Release the sensors from their housings and feed them back through the beans container guide.

Technical Information

**Figure 001-39:** Beans Container Sensor Removal**Note:**

When reassembling, each sensor must sit correctly in its housing.

4.21 Grinder (M25) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Prepare the machine for servicing; see Section 001-4.8.
3. Open the appliance door.
4. Take out all of the containers.
5. Pull off the grinding-grade adjustment handle. See Figure 001-35.
6. Remove the T10 screws securing the beans container guide. See Figure 001-36, Item 1.
7. Remove the beans container guide.
8. Slide the grinding-grade adjustment lever all the way to the right (arrow, Figure 001-37).
9. Remove the three T10 screws securing the grinder (Figure 001-37, Item 2).
10. Release and disconnect the temperature limiter (white wire) from the grinder. Refer to Figure 001-40.
11. Take out the grinder and disconnect its electrical connection.

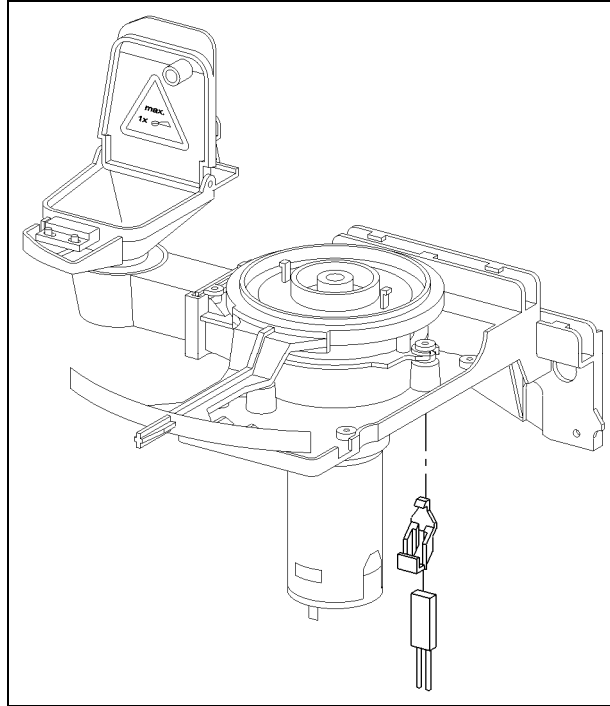


Figure 001-40: Grinder and Temperature Limiter

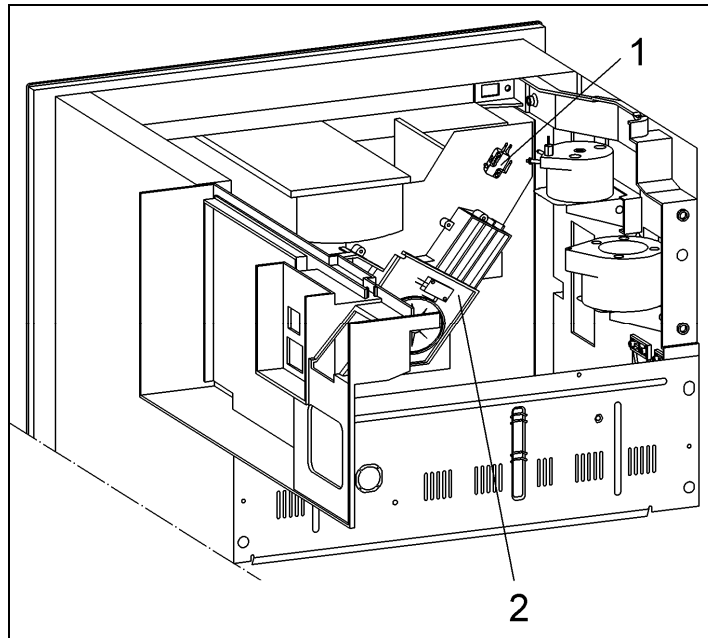
4.22 Grinder Temperature Limiter (F3-3) Removal

1. Remove the grinder; see Section 001-4.21.
2. Release the temperature limiter from its retainer on the grinder (refer to Figure 001-40).
3. Disconnect the temperature limiter from the grinder (white wire).
4. Cut the cable tie.
5. Remove the grinder temperature limiter from the appliance.

4.23 Brew Unit Drive (M26) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Prepare the machine for servicing; see Section 001-4.8.
3. Release the four locking tabs securing the brew unit drive cover and take off the cover.
4. Disconnect the red-and-black wiring harness from the brew unit drive (Figure 001-41, Item 2).

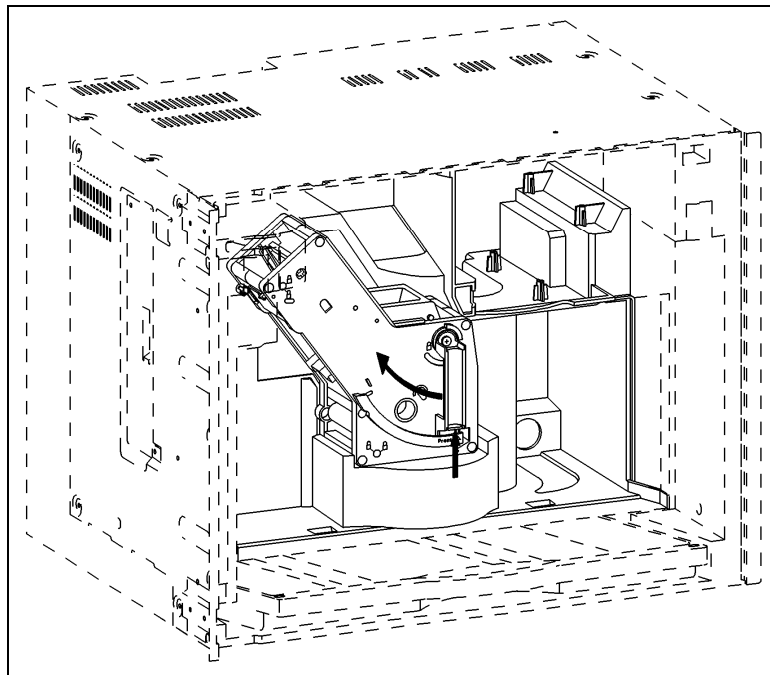
Technical Information



- 1 Grind amount compensation microswitch
- 2 Brew unit drive

Figure 001-41: Brew Unit Drive

5. Open the appliance door.
6. Take out all of the containers.
7. Release the brew unit and remove it from the appliance (Figure 001-42).

**Figure 001-42: Brew Unit Removal**

8. Remove the five T10 screws securing the brew unit drive; see Figure 001-43, Item 1.
9. Remove the white cam.
10. Remove the brew unit drive from the rear of the appliance.

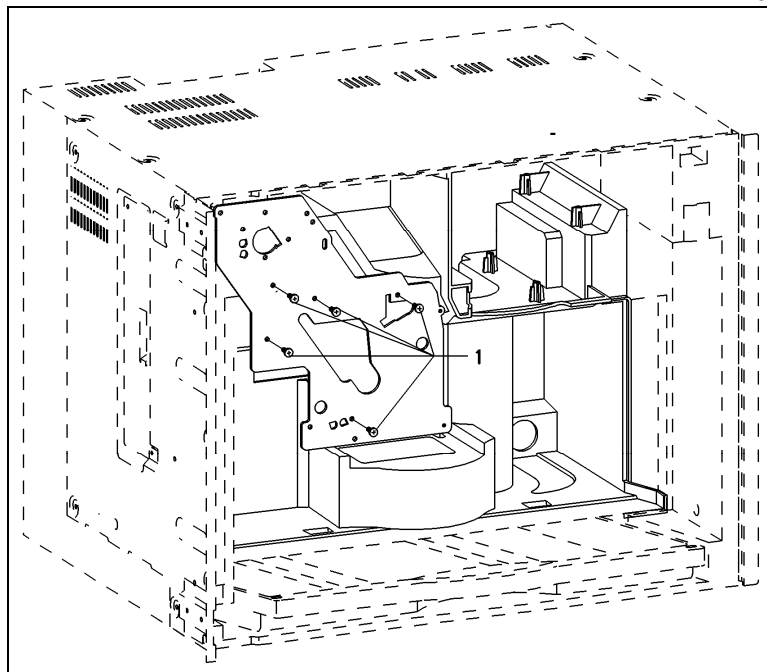


Figure 001-43: Brew Unit Drive Retaining Screws

6. Release and disconnect the hose from the brew unit drive.
7. Release the three switches from the brew unit drive.

Note:

When re-installing the brew unit drive, ensure that the white cam is in the home position. See Section 001-2.3.3.

4.24 Brew Unit Present Switch (S87-2) Removal

See Section 001-4.23.

4.25 Brew Unit Position Switch (S60-1, S60-2) Removal

See Section 001-4.23.

4.26 Grind Amount Step Contact Switch (S51-4) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Prepare the machine for servicing; see Section 001-4.8.
3. Disconnect all wiring from the grind amount step contact switch (refer to Figure 001-41, Item 1, for location).
4. Release and remove the grind amount step contact switch.

4.27 Door Contact Switch (S24) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Prepare the machine for servicing; see Section 001-4.8.
3. Remove the six T10 screws securing the right side panel.
4. Take off the right side panel.
5. Pull the door contact switch out of its housing in the upper left-hand corner of the plastic casing until its plug is visible.
6. Disconnect the door contact switch from the plug.

Technical Information**Note:****When reassembling:**

To facilitate reassembly, secure the plug and wiring.

4.28 Removing the Drip Tray Contact Springs from Inside the Appliance

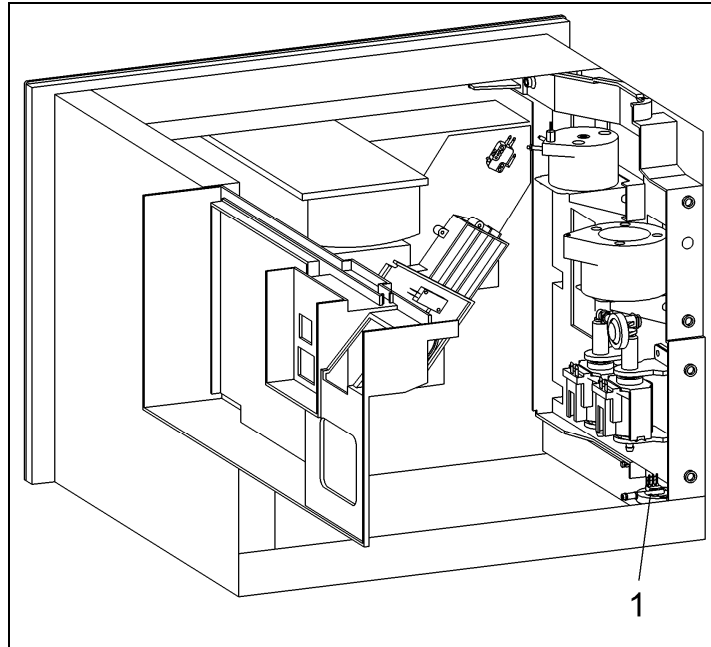
1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the bottom rear panel; see Section 001-4.7.
4. Prepare the machine for servicing; see Section 001-4.8.
5. Use small needlenose pliers to disconnect the electrical connection from each contact spring.
6. Remove the two T10 screws securing the small tray underneath the brew unit drive. Take off the tray.
7. Remove the three T10 screws securing the upper interior casing to the lower interior casing around the contact springs (one screw is to the left of the springs and two are to the right).
8. Separate the upper interior casing from the lower interior casing as much as possible, using appropriate tools to prop up the upper interior casing, so that the contact springs are accessible.
9. Squeeze each spring together and pull it up and off the lower interior casing.

4.29 Water Tank Level Switch (S12-1 or S12-3) Removal

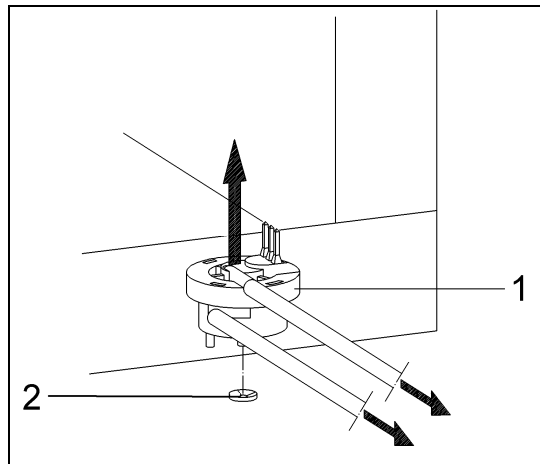
1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Prepare the machine for servicing; see Section 001-4.8.
3. Remove the six T10 screws securing the right side panel.
4. Take off the right side panel.
5. Remove the ten T10 screws securing the inside right side panel (black plastic).
6. Take off this panel.
7. Remove the T10 screw securing the appropriate level switch holder.
8. Disconnect the switch at the connector and remove it from the machine.

4.30 Flow Meter (B3-4) Removal

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the bottom rear panel; see Section 001-4.7.
3. Prepare the machine for servicing; see Section 001-4.8. The flow meter is located at Figure 001-44, Item 1.

**Figure 001-44:** Flow Meter

4. Disconnect the silicone hoses from the flow meter (diagonal arrows, Figure 001-45).
5. Disconnect the electrical connection from the flow meter.
6. Release the flow meter from its plastic support (Figure 001-45, Item 2)

**Figure 001-45:** Flow Meter (1) and Plastic Support (2)**Warning!**

In order to avoid possible water system faults (e.g., clogging or blocking of valves), grease, oil or other slip lubricants should never be used when assembling and installing water system parts.

Technical Information**4.31 Waste Container Present Switch (S87-4) Removal**

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the bottom rear panel; see Section 001-4.7.
4. Prepare the machine for servicing; see Section 001-4.8.
5. Open the service door.
6. Feed a T10 screwdriver through the access hole in the appliance. See Figure 001-46.

Note:

Remove the left side panel (10 screws) for easier access.

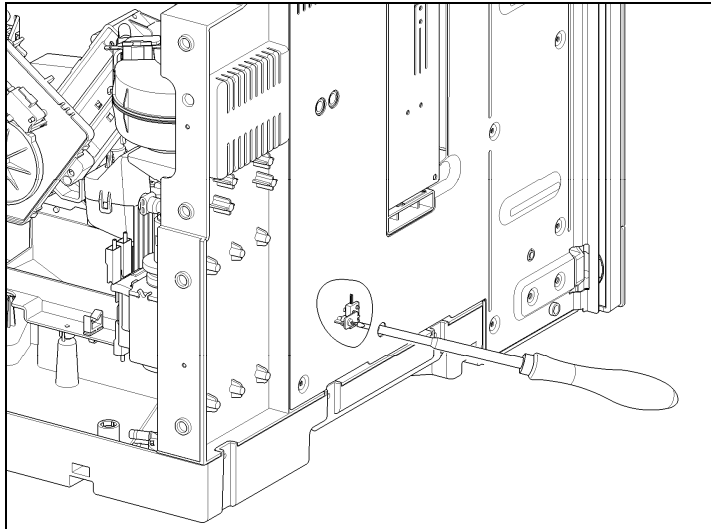


Figure 001-46: Access Hole for Waste Container Monitor Switch

7. Remove the T10 screw securing the waste container present switch holder.
8. Pull the switch out of its housing and disconnect it at the connector.
9. Remove the switch from the appliance, cutting cable ties as necessary.

4.32 RemoteVision Module Removal (CVA 680x Only)

1. Remove the appliance from its housing unit; see Section 001-4.5.
2. Remove the top rear panel; see Section 001-4.6.
3. Remove the bottom rear panel; see Section 001-4.7.
4. Squeeze the two retaining tabs on the sides of the module together.
5. Slide the module out through the bottom rear panel to remove.

4.33 Inner Door Cover Removal

1. Disconnect the appliance from the power supply.
2. Open the appliance door.
3. Take off the service cover (arrow, Figure 001-47).

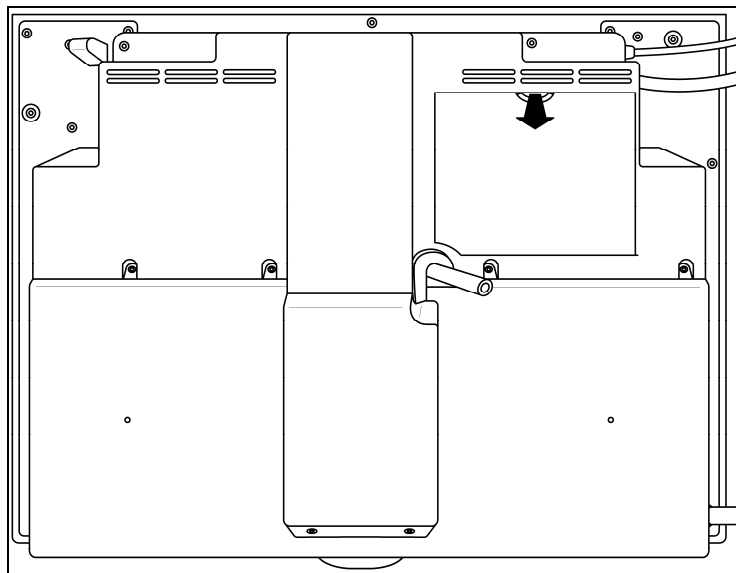


Figure 001-47: Service Cover

4. Disconnect and remove the hose (Figure 001-48).

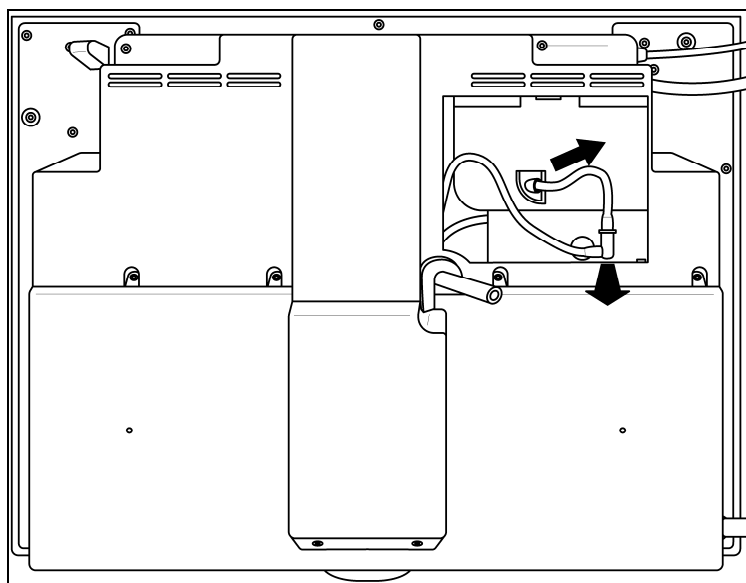


Figure 001-48: Hose on Inner Door Cover

5. Remove the 8 T10 screws securing the cover (Figure 001-49, Item 1).

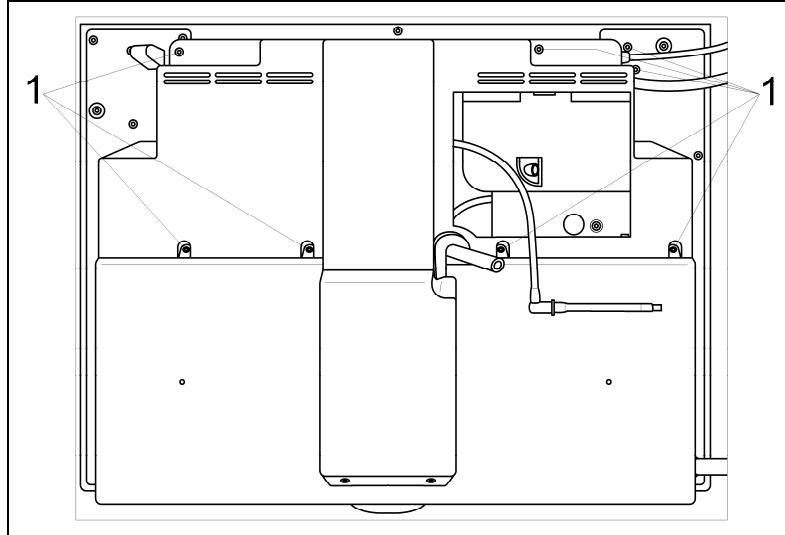
Technical Information

Figure 001-49: Inner Door Cover Screws

6. Take off the cover and disconnect the hose from the inside.

4.34 Dispenser Adjustment Motor (M19) Removal (CVA 680x Only)

1. Disconnect the appliance from the power supply.
2. Open the appliance door.
3. Take off the service cover (arrow, Figure 001-47).
4. Remove the T10 screw securing the auxiliary electronic cover (refer to Figure 001-51, Item 1); take off this cover.
5. Disconnect the wiring harness from the dispenser adjustment motor. See Figure 001-50, Item 1
6. Remove the two T10 screws securing the motor to the dispenser housing. See Figure 001-50, Item 2.
7. Pull off the wedge bracket at the base of the motor spindle. See Figure 001-50, Item 3.
8. Slide the motor up and out of the dispenser housing to remove.

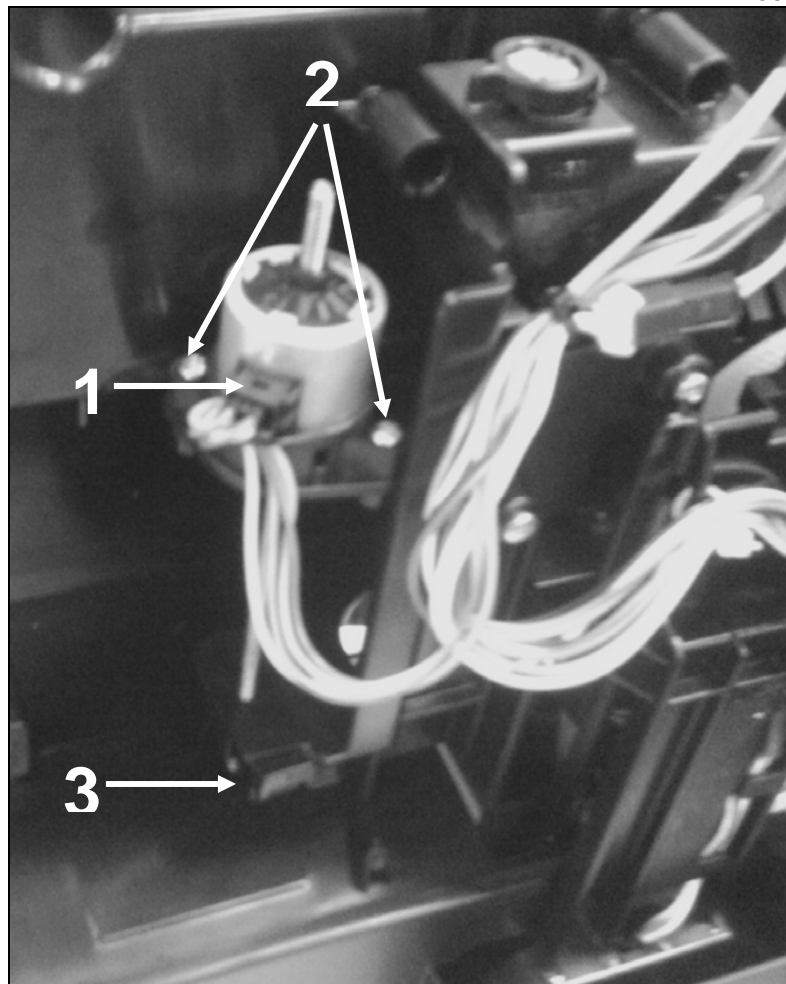


Figure 001-50: Dispenser Adjustment Motor M19

4.35 Spout Monitor Switch (S87-6) Removal

4.35.1 CVA 640x

1. Remove the inner door cover; see Section 001-4.32.
2. Slide the switch out of its housing. Refer to Figure D-2 or D-3, Item 14, for location.
3. Cut cable ties as necessary.
4. Pull the wiring out of its guide.
5. Disconnect the electrical connection from the switch.

4.35.2 CVA 680x

1. Remove the inner door cover; see Section 001-4.32.
2. Remove the two T10 screws securing the spout holder (Figure 001-51, Item 1).
3. Remove the two T10 screws securing the “pin” bracket behind the spout holder (Figure 001-51, Item 2).
4. Take off the spout holder and “pin” bracket, cutting cable ties as necessary.
5. Disconnect the wiring harness from the spout monitor switch. See Figure 001-52, Item 1.
6. Slide the spout monitor switch out of the spout holder.

Technical Information

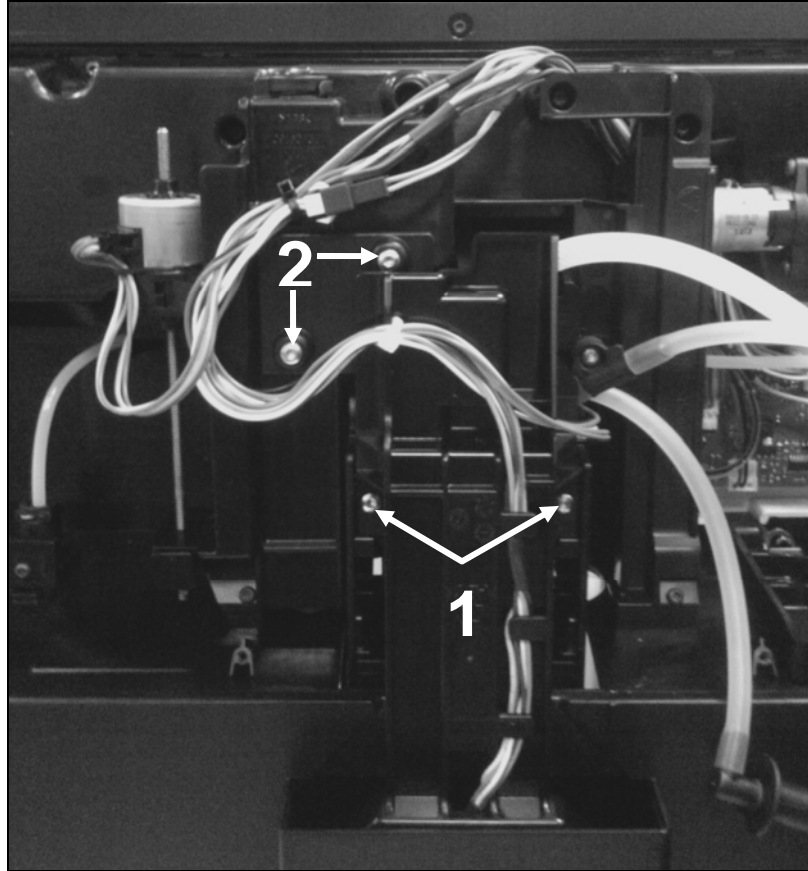


Figure 001-51: Spout Holder and Pin Bracket, CVA 680x

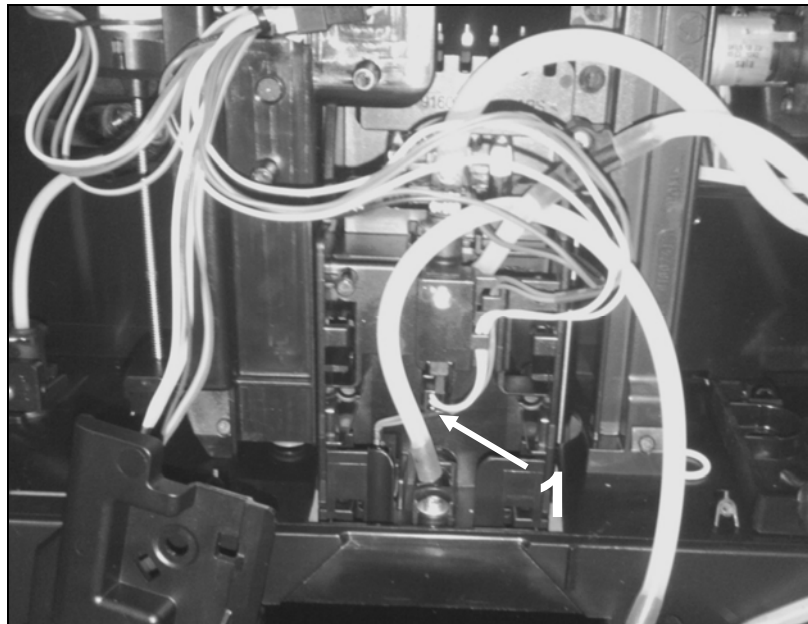


Figure 001-52: Spout Monitor Switch

4.36 Dispensing-Area Light (H3) Removal

4.36.1 CVA 640x

1. Take off the spout cover and spout assembly, then open the appliance door.
2. Remove the inner door cover; see Section 001-4.32.
3. Release the spring clip securing the Teflon hose in front of the spout holder and light assembly on the inside of the door; take off the hose.
4. Remove the two T10 screws securing the hose assembly in front of the spout holder and light assembly on the inside of the door; take off this hose assembly.
5. Remove the two T10 screws securing the spout holder to the inside of the door; take out the spout holder.
6. Remove the T10 screw and washer securing the light assembly to the inside of the door.
7. Disconnect the electrical connection from the light assembly.
8. Pull the light out of the spout.

Note:

Make sure that the red seal is installed on the Teflon hose before reinstalling it in front of the spout holder.

4.36.2 CVA 680x

1. Remove the inner door cover; see Section 001-4.32.
2. Remove the dispenser adjustment motor; see Section 001-4.34.
3. Close the appliance door, take off the spout cover and spout assembly, then open the appliance door again.
4. Remove the two T10 screws securing the spout holder (Figure 001-51, Item 1).
5. Remove the two T10 screws securing the "pin" bracket behind the spout holder (Figure 001-51, Item 2).
6. Take off the spout holder and "pin" bracket, cutting cable ties as necessary.
7. Release the spring clip securing the Teflon hose in front of the lighting assembly and disconnect the hose.
8. Remove the T10 screw securing the hose bracket in front of the lighting assembly (Figure 001-53, Item 1) and take off this bracket.
9. Remove the T10 screw and washer securing the lighting assembly (Figure 001-53, Item 2).

Technical Information

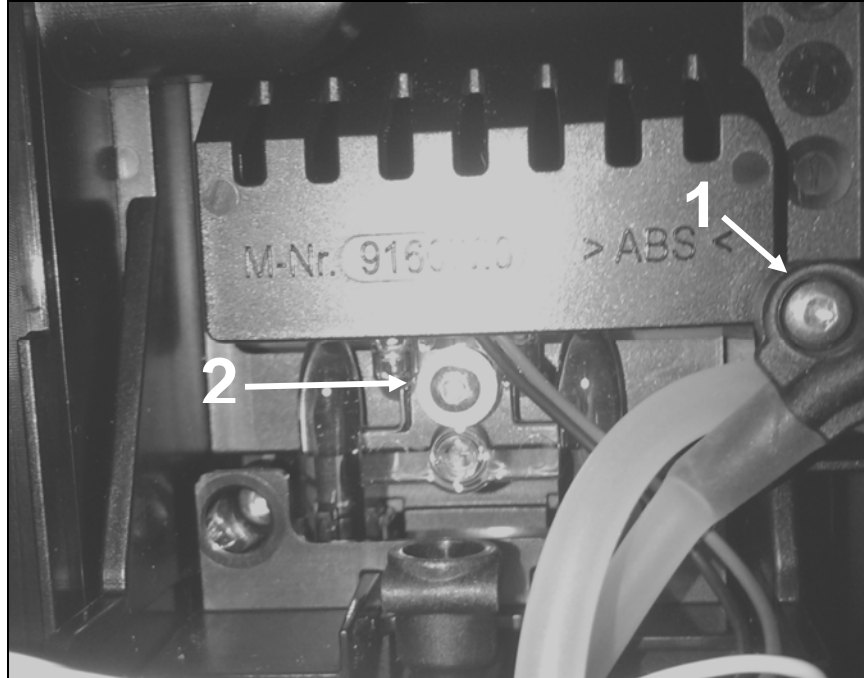


Figure 001-53: Hose Bracket and Lighting Assembly

10. Remove the T10 screws securing the lighting assembly mounting bracket (circles, Figure 001-54); take off this bracket.

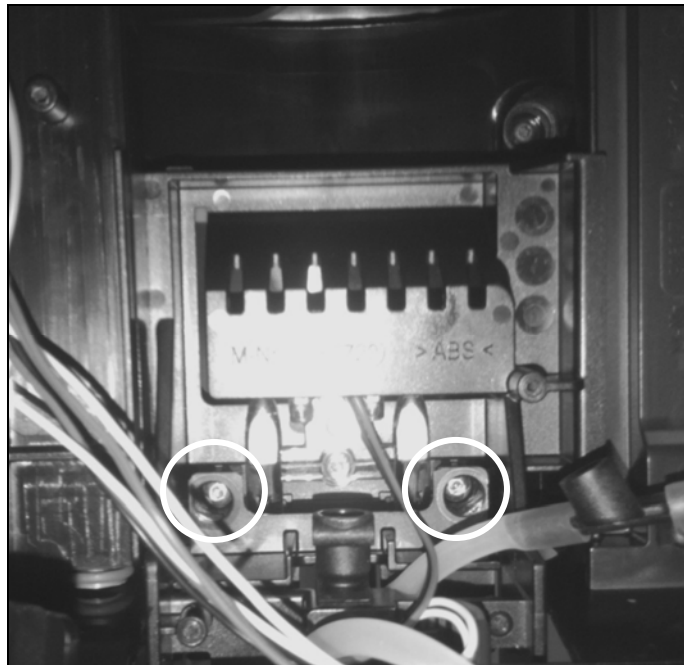


Figure 001-54: Lighting Assembly Mounting Bracket

11. Unsnap the lenses from the bracket at the front of the dispenser.
12. Pull the lighting assembly down and out of the dispenser.
13. Disconnect the wiring harness from the lighting assembly.

Technical Information

4.37 Cup Protection Switch (S86) Removal (CVA 680x Only)

1. Remove the inner door cover; see Section 001-4.32.
2. Remove the dispenser adjustment motor; see Section 001-4.34.
3. Close the appliance door, take off the spout cover and spout assembly, then open the appliance door again.
4. Remove the two T10 screws securing the spout holder (Figure 001-51, Item 1).
5. Remove the two T10 screws securing the “pin” bracket behind the spout holder (Figure 001-51, Item 2).
6. Take off the spout holder and “pin” bracket, cutting cable ties as necessary.
7. Using a small flathead screwdriver, press in on the retaining tabs on the sides of the cup protection switch (arrows, Figure 001-55) and release the switch from its holder.
8. Disconnect all electrical connections from the cup protection switch.

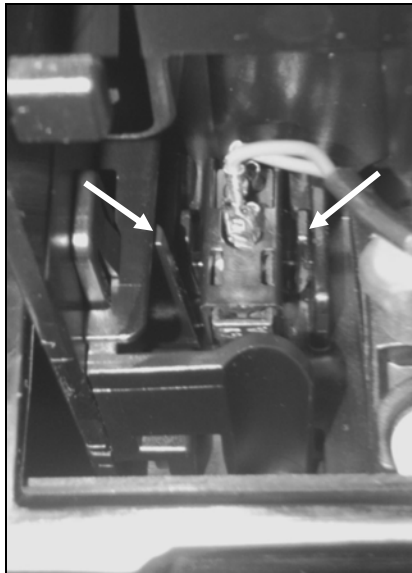


Figure 001-55: Cup Protection Switch

4.38 Cup-Edge Sensor (1B10, 2B10) Removal (CVA 680x Only)

1. Remove the inner door cover; see Section 001-4.32.
2. Remove the dispenser adjustment motor; see Section 001-4.34.
3. Close the appliance door, take off the spout cover and spout assembly, then open the appliance door again.
4. Remove the two T10 screws securing the spout holder (Figure 001-51, Item 1).
5. Remove the two T10 screws securing the “pin” bracket behind the spout holder (Figure 001-51, Item 2).
6. Take off the spout holder and “pin” bracket, cutting cable ties as necessary.
7. Disconnect the wiring harness from the appropriate cup-edge sensor (Figure 001-56, Item 1).
8. Remove the two T10 screws securing the appropriate cup-edge sensor to the spout holder (Figure 001-56, Item 2) and release the cup-edge sensor.

Technical Information



Figure 001-56: Cup-Edge Sensors

4.39 Milk Container Level Sensor (S12-4) Removal

1. Remove the inner door cover; see Section 001-4.32.
2. Remove the T10 screw securing the hose bracket in front of the auxiliary electronic cover on the inside of the door.
3. Take off this bracket and release the hoses from the auxiliary electronic cover.
4. Remove the T10 securing the auxiliary electronic cover (Figure 001-57, Item 1); take off the cover.

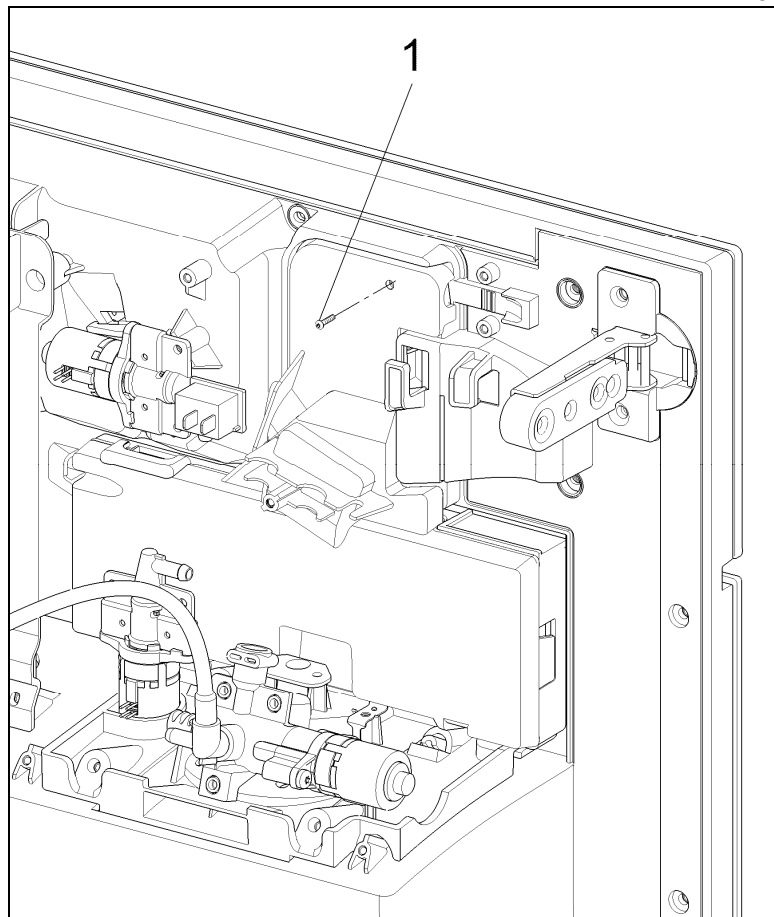


Figure 001-57: Auxiliary Electronic Cover

5. Remove the T10 screw securing each sensor blade (see Figure 001-58, Item 1).
6. Release each sensor blade, using needlenose pliers to disconnect its electrical connection.

Technical Information

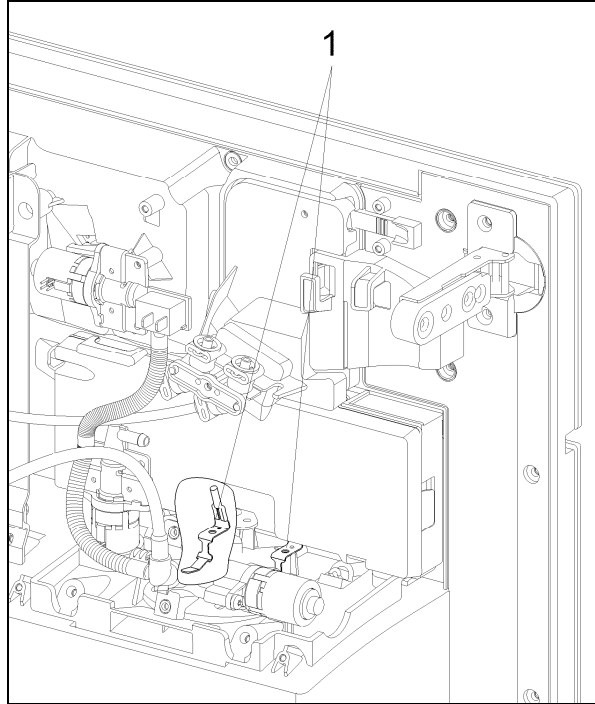


Figure 001-58: Sensor Blades

4.40 Milk Valve (M24) Removal

1. Remove the inner door cover; see Section 001-4.32.
2. Using needlenose pliers, release the spring clip securing the hose to the milk valve, then disconnect the hose from the valve.
3. Remove the three T10 screws securing the milk valve (Figure 001-59, Item 1). Release the milk valve.
4. Remove the T10 screw securing the hose bracket in front of the auxiliary electronic cover on the inside of the door (Figure 001-59, Item 2).
5. Take off this bracket and release the hoses from the auxiliary electronic cover.
6. Remove the T10 screw securing the auxiliary electronic cover (Figure 001-57, Item 1, or Figure 001-59, Item 3); take off the cover.
7. Disconnect the milk valve from the auxiliary electronic and remove it from the appliance.

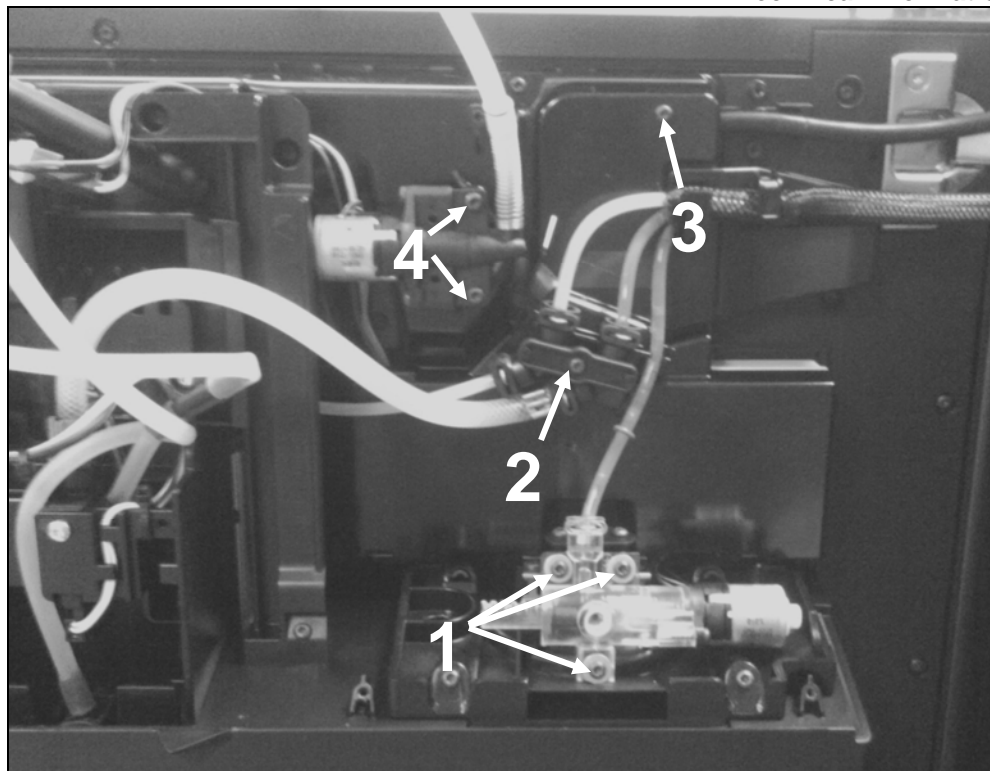


Figure 001-59: Milk Valve, Air Valve, Hose Bracket and Auxiliary Electronic Cover

4.41 **Air Valve (M28) Removal**

1. Remove the inner door cover; see Section 001-4.32.
2. Disconnect the hose from the air valve.
3. Remove the two T10 screws securing the air valve (Figure 001-59, Item 4).
4. Remove the T10 screw securing the hose bracket in front of the auxiliary electronic cover on the inside of the door (Figure 001-59, Item 2).
5. Take off this bracket and release the hoses from the auxiliary electronic cover.
6. Remove the T10 screw securing the auxiliary electronic cover (Figure 001-57, Item 1, or Figure 001-59, Item 3); take off the cover.
7. Disconnect the air valve from the auxiliary electronic and remove it from the appliance.

Note:

When reassembling:

The connection for the milk valve must point downward.

4.42 **Auxiliary Electronic EPZ (N1-25) Removal**

1. Remove the inner door cover; see Section 001-4.32.
2. Disconnect the hose from the air valve.
3. Remove the two T10 screws securing the air valve (Figure 001-59, Item 4).
4. Remove the T10 screw securing the hose bracket in front of the auxiliary electronic cover on the inside of the door (Figure 001-59, Item 2).
5. Take off this bracket and release the hoses from the auxiliary electronic cover.
6. Remove the T10 securing the auxiliary electronic cover (Figure 001-57, Item 1, or Figure 001-59, Item 3); take off the cover.

Technical Information

7. Remove the two T10 screws securing the milk container receptacle (arrows, Figure 001-60).

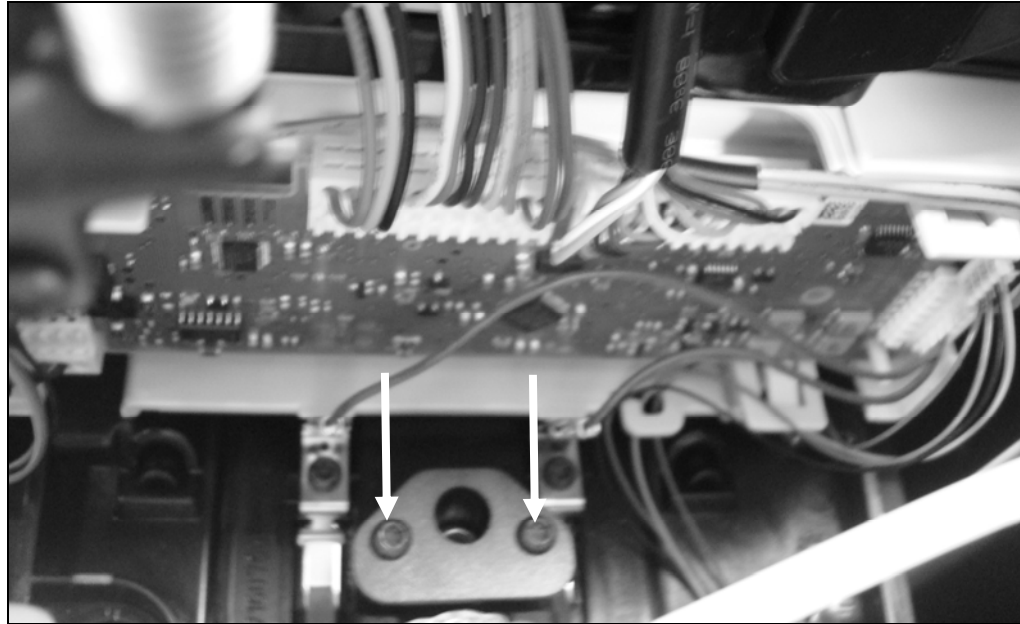


Figure 001-60: Milk Container Receptacle Screws

8. Flip the milk container receptacle over and release the two locking tabs (flathead screwdriver) securing the auxiliary electronic assembly to the receptacle.
9. Disconnect all wiring from the auxiliary electronic.
10. Remove the auxiliary electronic assembly from the appliance.

4.43 Control Panel and Display Electronic EPB (N1-2) Removal

1. Remove the inner door cover; see Section 001-4.32.
2. Remove the T10 screw securing the hose bracket in front of the auxiliary electronic cover on the inside of the door.
3. Take off this bracket and release the hoses from the auxiliary electronic cover.
4. Remove the T10 screw securing the auxiliary electronic cover (Figure 001-57, Item 1); take off the cover.
5. Remove the eleven T10 screws securing the control panel (circles, Figure 001-61).
6. Release the control panel with display electronic.
7. Disconnect all electrical connections from the display electronic.
8. **CVA 640x only:** Release the retainers (8 locking tabs) on the display electronic housing. Remove the display electronic from the control panel.

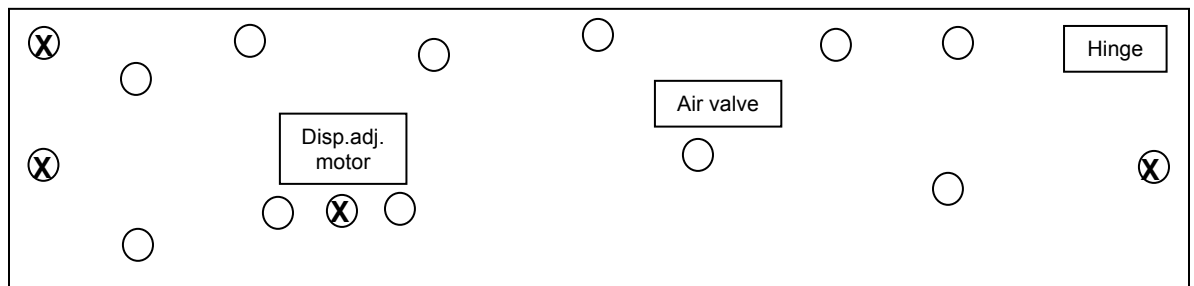


Figure 001-61: Control Panel Screws

Technical Information
Note:

Circles marked with an "X" are screws that do not have to be removed.

CVA 680x only:
Warning!

Damage from static discharge.

Before working on the electronic, touch the appliance chassis to eliminate any static discharge.

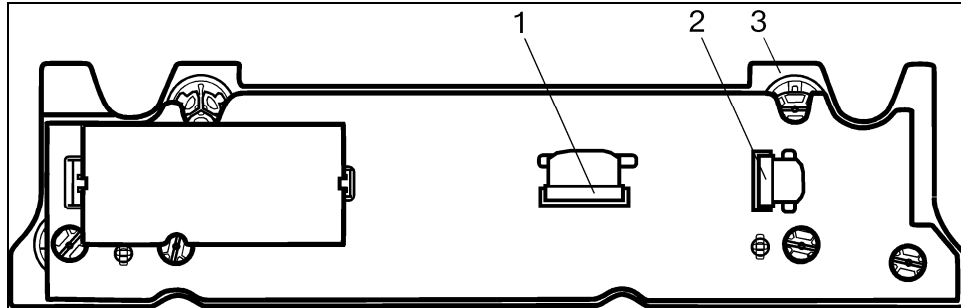


Figure 001-62: EPB/EPZ Electronic with Housing (CVA 680x)

- 1 Display ZIF plug
- 2 Touchscreen ZIF plug
- 3 Housing

9. Open the touchscreen zero insertion force (ZIF) plug adapter (Figure 001-63).
10. Remove the ZIF plug from the adapter.

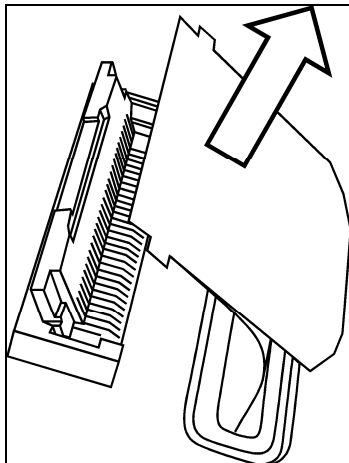


Figure 001-63: Touchscreen ZIF Plug

Note:

A wide flathead screwdriver and a large Phillips-head screwdriver will be required for the next few steps.

11. Insert a screwdriver into the retainers on the housing (Figure 001-64).
12. Twist the retainers and pull the EPB/EPZ electronic assembly away from the fascia panel, moving from left to right (start at the arrow in the below illustration).

Technical Information

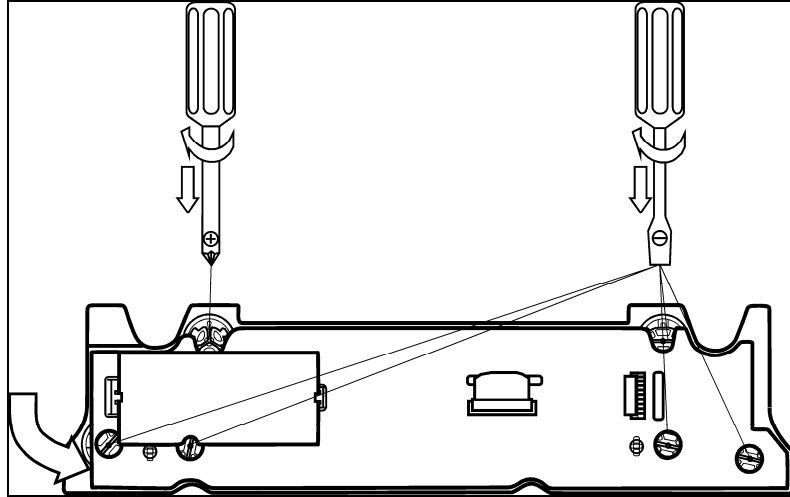


Figure 001-64: Display Electronic Removal, CVA 680x