SPECIFICATIONS

Dimensions:	140 mm x 173 mm x 135 mm (without chamber fitted)
Weight:	2.8 kg (no chamber fitted), 3.1 kg (chamber fitted and filled with water)
Supply Frequency:	50/60 Hz Supply Voltage: 230 V~ Supply Current: 1.0 A max at 230 V~
Heater Wire:	22 V~, 2.73 A, 60 W, 50/60 Hz
Heater Plate Over-temperature Cutout:	118 ± 6 °C

Temperature Control Settings

Invasive Mode:	Chamber outlet: 35.5 - 37 °C, Airway 35 - 40 °C
Noninvasive Mode:	Chamber outlet: 31 °C, Airway 28 - 34 °C
Display:	Three digit 14 mm 7 segment LED
Range:	10 - 70 °C, Accuracy: ± 0.3 °C (in 25 - 45 °C temperature range)

Alarm Parameters

High Humidity Alarm:	An immediate, audible alarm at a displayed temperature of 41 °C or if the airway temperature exceeds 43 °C
Low Humidity Alarm:	An audible alarm between 10 minutes @ 29.5 °C, and 60 minutes @ 34.5 °C (Invasive Mode only)
Sound Pressure Level:	Alarms exceed 50 dBA @ 1 m

Performance

Recommended ambient temperature range: 18 - 26 °C

CAUTION: If operating in ambient temperatures outside the recommended range, consult your local Fisher & Paykel Healthcare representative or consult the technical manual.

Recommended Flow Range:	Invasive Mode: up to 40 L/min, Noninvasive Mode: up to 120 L/min Refer to breathing circuit specifications for minimum flow
Humidity Performance:	Invasive Mode: > 33 mg/L, Noninvasive Mode: >10 mg/L
Maximum Operating Pressure:	Refer to chamber and breathing circuit specifications
Warm-up time:	Less than 30 minutes

Symbol Definitions

Type BF Applied Part	ATTENTION Consult accompanying documents	Alternating current	IPX1 Resistant to vertical falling drips	Caution – Hot surface	CE 0123 CE MARKING 93/42/EEC	Dispose of product in correct manner	Equipotential Stud	Date of manufacture	Serial Port

WARNING

Ensure that invasive mode is set for patients that have bypassed airways.

The use of breathing circuits, chambers or other accessories which are not approved by Fisher & Paykel Healthcare may impair performance or compromise safety.

Ensure that both temperature probe sensors are correctly and securely fitted. Failure to do so may result in temperatures in excess of 41 °C being delivered to the patient.

Ensure maintenance of grounding integrity by connection to a "hospital grade" receptacle. Always disconnect supply before servicing.

When mounting a humidifier adjacent to a patient ensure that the humidifier is always positioned lower than the patient.

The operation of high frequency surgical apparatus, shortwave or microwave equipment in the vicinity of the humidifier may adversely affect its function. If this occurs, the humidifier should be removed from the vicinity of such devices.

Do not touch the glass tip of the chamber temperature probe during use. Keep black connectors dry at all times.

Check accessories for any physical damage before use and replace if damaged.

HC550 RESPIRATORY HUMIDIFIER

550

Patents Pending in Principal Countries of the World

The HC550 respiratory humidifier is used to warm and humidify gases delivered to patients requiring mechanical ventilation, positive pressure breathing assistance, or other medical gases.

INSTRUCTION SHEET DO NOT DISCARD

REF 185043654
Rev C 2010-02

Fisher & Paykel HEALTHCARE

SET UP

1. Slide humidification chamber **(A)** onto humidifier base and connect breathing circuit **(B)** (refer to humidification chamber and breathing circuit operating instructions for further details).

2. Connect the temperature probe plug **(C)** (REF 900MR86X) to the blue socket on the humidifier base until an audible click is heard.

3. Push the chamber probe **(D)** and airway probe **(E)** into the breathing circuit. Make sure the chamber probe is correctly located in its key-way and that both probes are pushed home. The probe lead can be restrained using breathing circuit clips.

4. Connect the heater wire adaptor plug **(F)** (REF 900MR8XX) to the yellow socket on the humidifier base until an audible click is heard.

5. Connect the other end of the heater wire adaptor to the breathing circuit socket **(G)**.

6. The humidification system is now set up and ready for use. After power on, the humidifier will operate in the last mode setting.

ATTENTION: Refer to operating instructions which accompany each accessory.
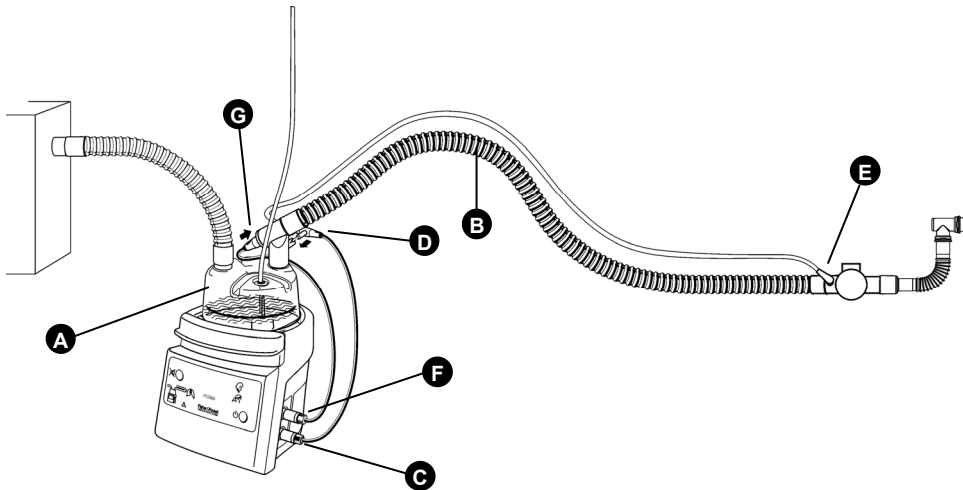
THE FOLLOWING ACCESSORIES ARE REQUIRED:

- Humidification Chamber (e.g: MR290)
- Breathing Circuit (e.g: RT100)
- Temperature Probe (e.g: 900MR869)
- Heater Wire Adaptor (e.g: 900MR800)
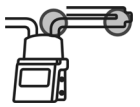- Mounting Bracket (to suit ventilator)

Choice will depend upon application. Please contact your local Fisher & Paykel Healthcare representative for recommendations.
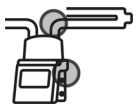

OPERATION

MUTE
The mute button silences the humidifier's audible alarm for at least two minutes. The muted time depends on the alarm condition and the severity of its cause.

SET-UP INDICATORS

Chamber & Airway Probes
Lights if either the chamber probe or the airway probe is not inserted into the breathing circuit correctly.
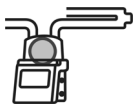
Heater Wire
Lights if the heater wire adaptor or breathing circuit has not been connected, or is damaged.

Temperature Probe
Lights if the temperature probe is not correctly plugged into the HC550, or the probe is faulty.

Water Out
Lights when there is insufficient water in the chamber. Check water supply. Maximum time to alarm of 20 minutes.

See Manual
The humidifier and all accessories should be immediately replaced and sent for servicing.

TEMPERATURE DISPLAY
During normal operation the display temperature is not visible. When the high humidity alarm activates the display shows the saturated gas temperature delivered to the patient (the lower of the airway and chamber temperatures in °C).

By pushing and holding the mute button for one second, the chamber outlet temperature then the airway temperature is displayed. The display will then disappear.
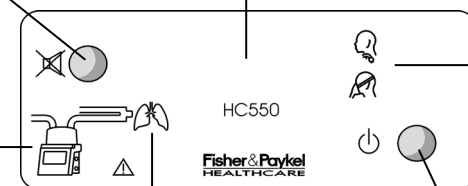
LOW HUMIDITY ALARM
An audible alarm and flashing indicator are given for saturated gas temperatures of *35.5 °C or lower* (invasive mode only). Caused by cold/draughty conditions or very high or low gas flows.

If the circumstances causing the low humidity alarm cannot be changed then the audible alarm acts as a reminder that the patient is receiving inadequate humidity and may require further intervention to maintain airway clearance.

HIGH HUMIDITY ALARM
A flashing temperature display showing *41 °C or higher*. The humidifier will discontinue heating of the chamber and circuit until the temperature decreases to within normal limits.

MODES
WARNING: Ensure that invasive mode is set for patients that have bypassed airways

Invasive Mode
This mode is for patients with bypassed airways. The humidifier delivers gas as close to body temperature saturated (37 °C, 44 mg/L) as possible.

Under cold or draughty conditions the chamber temperature may drop as low as 35.5 °C in order to maintain a dry breathing circuit.

Noninvasive Mode
This mode is for patients receiving face mask therapy, and delivers a comfortable level of humidity.

The Technical Manual explains how to switch between modes.

ON/OFF BUTTON
The humidifier will power ON if this button is held down briefly, but must be held down for one second to turn the humidifier off.

ROUTINE MAINTENANCE
Refer maintenance to qualified service personnel. A full technical description including routine maintenance and service data is contained in the Technical Manual which is available from your supplier or Fisher & Paykel Healthcare (REF 185043658)

Diagnostic Menu

By pressing the mute and power buttons together for 1 second, the diagnostic menu is entered, indicated by the display of two rows of dashes (= = =). Releasing both buttons will allow the diagnostic menu to cycle automatically through the menu, pausing at each function. Pressing the mute button at this time will display the value behind each function for as long as the mute button is held.

Diagnostic Menu

Display	Description
oPn	Operation mode in = Invasive mode nin = Non-Invasive mode To change the operation mode push the mute button and then, without releasing the mute button, the power button for 1 second. If the display changes to "in" you have set the humidifier to invasive mode. If the display changes to "nin" you have set the humidifier to noninvasive mode. The humidifier will confirm the change in operation mode with an audible beep.
Cct	Connected breathing circuit identification: S = Standard inspiratory heater connected C = Coaxial inspiratory heater connected E = Expiratory heater connected --- = No heaters detected while under heater wire control
CSP	Chamber set point, in 0.1 °C resolution eg: 37.0 Invasive mode range 35.5 to 37 °C. Non-Invasive mode range 31.0 °C.
Cdc	Chamber Duty Cycle (%) During selection of this menu and while a chamber probe out test is active the chamber probe indicator will light.
CHP	Chamber Power / Flow ratio (W/LPM)
hP	Heater Plate Temperature (1 °C)
Flo	Gas Flow Rate (0.1 LPM) --- = Unknown Flow (flow measurement not started)
FLr	Gas Flow Rate Range: --- = Unknown Flow (flow measurement not started) no = No flow, (Stand-by) Lo = Low flow, (< 3 LPM) In = Intermediate flow, (2 to 17 LPM) Hi = High flow, (> 13 LPM) - = Ventilated flow detected
ASP	Airway temperature set point (0.1 °C)
Adc	Airway Duty Cycle (%) During selection of this menu and while an airway probe out test is active the airway probe indicator will light.
H2O	Water out number, used to detect the presence of chamber water, calculated from, chamber power / (heater plate temp. – chamber temp.). During selection of this menu and while the water out number falls below a dry chamber threshold the water out indicator will light.
LAS	Last Alarm State, the display will blank, and the humidifier's last alarm will be shown on the indicators. To clear LAS, press and hold the mute and power buttons for 1 second. The humidifier will beep when LAS has been cleared.
LFS	Last Fault State. To clear LFS, press and hold the mute and power buttons for 1 second. The humidifier will beep when LFS has been cleared.
SoF	Software version
End	The diagnostic menu will automatically exit after 6 seconds.