

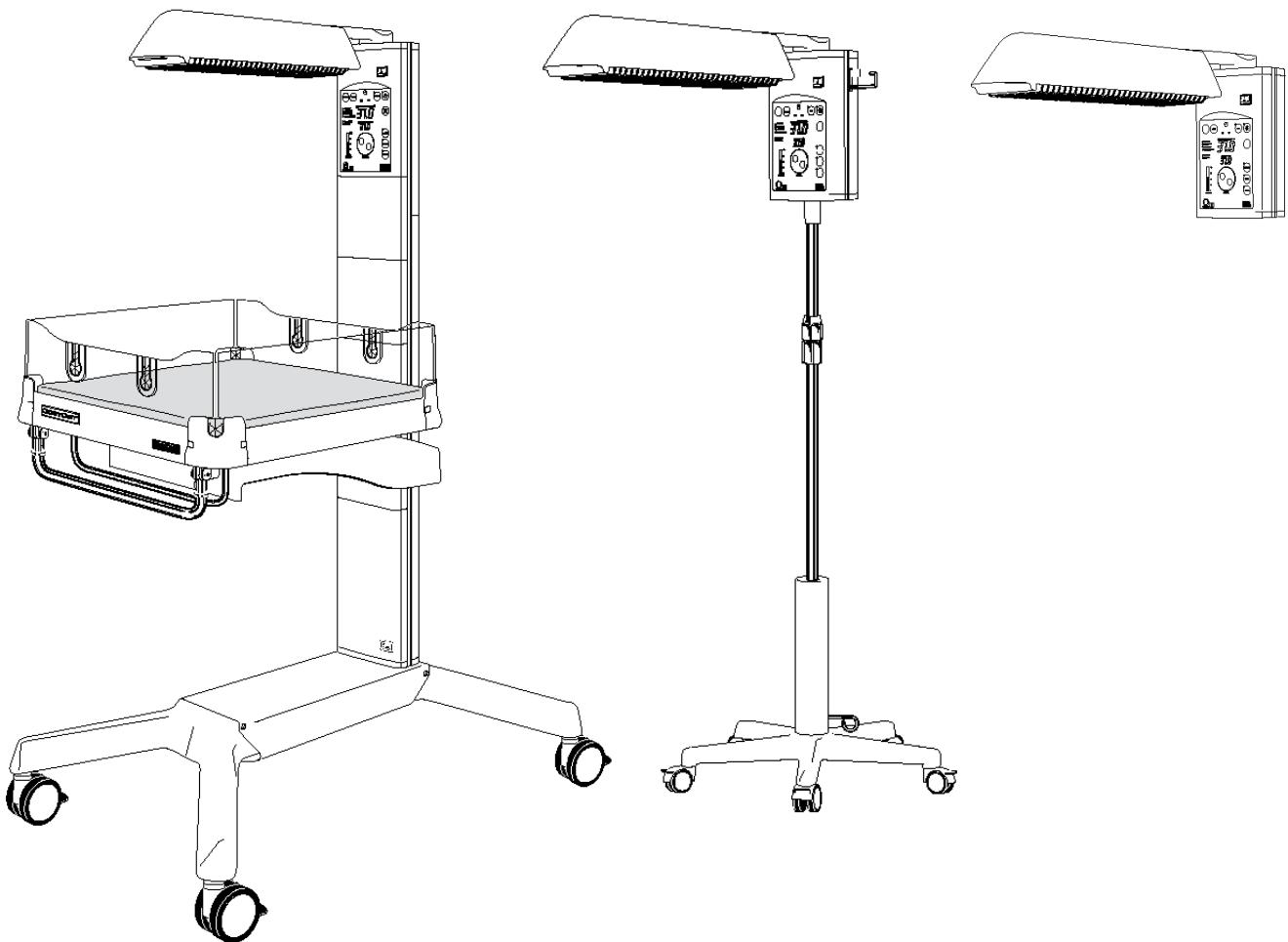
Infant Warmer

Product Technical Manual (PTM)

Post June 2008

- IW910 Baby Control Mobile Infant Warmer
 - IW920 Manual Control Mobile Infant Warmer
 - IW930 Series Baby Control CosyCot™ Infant Warmer
 - IW950 Series Manual Control CosyCot™ Infant Warmer
 - IW980 Baby Control Wall Mount Infant Warmer
 - IW990 Manual Control Wall Mount Infant Warmer
 - IW900 Series Infant Warmer Accessories
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PTM REVISION HISTORY

FPH Internal Use Only - Created using template TMP-230_a. Refer to TRS-241 for the Verification of Understanding.

REVISION	DATE	DESCRIPTION OF PTM CHANGE
A	NOV / 2008	First release
B	AUG / 2009	Fixed Aluminium Base Added.
C	AUG / 2013	PTM updated to reflect compliance with IEC60601-1:2005, IEC60601-2-21:2009 and associated standards.

Intended Use (including indications for use)

The IW900 series Infant Warmers are designed to provide warmth to infants in the first few weeks of life, when an infant's self-thermoregulation capacity may be reduced, or if external thermal support is required or desirable. This may include neonates (including premature/low birth-weight neonates) in Labor and Delivery (L&D) Room applications, thermal support of premature/low birth-weight neonates and critically ill infants in neonatal intensive care units (NICUs) and thermal support of infants/pediatrics less than 10kg in hospital nurseries. Situations which necessitate unobstructed access to an infant or neonate, including during resuscitation or surgical procedures, may indicate the need for a radiant heat source instead of equivalent support devices such as infant incubators. The IW900 series warmers may therefore also be used in the Operating Room.

The IW930/IW950 series Infant warmers are additionally intended to be used for intra-hospital transport between the above stated specialist treatment areas.

The IW900 series infant warmer is not designed or intended to be used outside of the hospital environment. The IW900 series infant warmer is not designed or intended to be used in ambulatory vehicles.

CAUTION

Only competent individuals trained in the repair of this equipment should attempt to service it as detailed in this manual.

Detailed information for more extensive repairs is included in the service manual solely for the convenience of users having proper knowledge, tools and test equipment, and for service representatives trained by Fisher & Paykel Healthcare.

Fisher & Paykel Healthcare has a policy of continued product improvement and reserves the right to alter specifications without notice.

This Service Manual is valid for warmers manufactured from June 2008. For Infant Warmers & accessories manufactured prior to this date refer to 185041130.

Warranty

Subject to any agreement to the contrary, the product described in this manual is warranted against defects in materials and workmanship for one year from the date of shipment. However, the warranty is void if the product is damaged as a result of mishandling, accident or misuse. In no event shall the manufacturer be liable for incidental or consequential damages (e.g. loss of use) resulting from breach of warranty. All other expressed and implied warranties under law are excluded to the extent that it can be lawfully excluded.

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PART 1: SYMBOLS & DEFINITIONS

	Attention: Consult Accompanying Documents		Baby Mode (Servo mode)
	Warning: Electric Shock Hazard		Manual Mode
	Alternating Current		Timer
	Power On (connect to the mains power supply)		Light
	Power Off (disconnect from the mains power supply)		Mute (alarm silence)
	Power On (only for part of equipment)		25% power level (Prewarm or Standby Mode)
	Power Off (only for part of equipment)		Check Baby
	Electrical Input		High Temperature Alarm
	Electrical Output		Low Temperature Alarm
	Gas Inlet		Sensor Disconnect
	Gas Outlet		Power Disconnect
	Heater		Temperature Sensor
	Contact your local distributor to recycle waste electronic goods responsibly		Sensor Temperature °C
	Caution: ESD sensitive		
	Type B Applied Part		Type BF Applied Part

Warning Statement



WARNING

A WARNING statement refers to the conditions when the possibility of injury to the patient or user exists if a procedure is not followed correctly.

Caution Statement

CAUTION

A Caution statement indicates the possibility of damage to the equipment exists if a procedure is not followed correctly.

Note Statement

NOTE:

A Note statement provides additional information intended to clarify points, procedures or instructions.

PART 2: OPERATION AND GENERAL INFORMATION

2.1 PRODUCT OVERVIEW

INTRODUCTION

The Fisher & Paykel range of radiant warmers are specifically designed to provide a controlled source of warmth to Neonates.

MODELS

The IW910 Baby Control and IW920 Manual Control Mobile Infant Warmers provide truly mobile and height adjustable warming wherever needed.

The IW930 Series Baby Control and IW950 Series Manual Control CosyCot™ Infant Warmers combine an integrated bassinet and mobility base in four options:

IW931 Standard Size Bassinet & Mattress – Preset Base

IW932 Standard Size Bassinet & Mattress – Electric Elevator Base

IW933 Long Bassinet & Mattress – Preset Base

IW934 Long Bassinet & Mattress – Electric Elevator Base

IW951 Standard Size Bassinet & Mattress – Preset Base

IW952 Standard Size Bassinet & Mattress – Electric Elevator Base

IW953 Long Bassinet & Mattress – Preset Base

IW954 Long Bassinet & Mattress – Electric Elevator Base

To these base models optional accessories can be added to suit your own particular warming needs

The IW980 Baby Control and IW990 Manual Control Wall Mount Infant Warmers provide discrete and convenient space saving warming.

HEAT CONTROL

In *Baby Mode* (IW910, IW93x, & IW980 only), the infant warmers provide stable control of the baby's skin temperature by automatically adjusting the heater power to compensate for varying physiological and environmental conditions. This is achieved using a microprocessor which measures and updates the baby's temperature ten times every second.

In *Manual Mode*, all infant warmers provide user-adjustable heater power and the option to monitor the baby's skin temperature using the DuoSense™ skin sensor.

In *Prewarm Mode* all models provide alarm and trouble-free pre-warming of the heater.

DUOSENSE™ SKIN SENSOR

Safety is further enhanced by DuoSense™ skin sensor. This sensor measures the desired skin temperature using two independent sensors. These sensors are continuously compared to ensure accurate and reliable skin temperature measurements.

OPERATING MANUAL

This service manual is intended to be used in conjunction with the IW900 Series Operating Manual (185044990) and Installation and Assembly Instruction Sheets (see part numbers below). The operating manual & assembly instructions sheets must be read thoroughly and all instructions, warnings, cautions and notes thoroughly understood by all personnel working with warmers prior to use.

Assembly Instruction Sheets:

185044970	Mobile	(IW910/920)
185043341	CosyCot™	(IW930/950)
185045314	CosyCot™ in crate	(IW930/950)
185044973	Wall Mount	(IW980/990)

2.2 HEATER POWER CONTROL

2.2.1 MODES OF POWER CONTROL

PREWARM MODE

Power is fixed at 25% (total irradiance at 68 cm < 10 mW/cm²). This is sufficiently low that minimal alarms need to be active but sufficiently high that the heating element will keep warm and be ready for immediate use.

MANUAL MODE

Power is adjustable in the range 0% to 100% in 5% steps.

BABY/SERVO MODE

Power is automatically controlled according to the measured skin temperature to achieve the desired set temperature. The set temperature is adjustable from 34.5°C to 37.5°C in 0.1°C steps.

2.2.2 DESCRIPTION OF POWER CONTROL

POWER COMPENSATION

The actual mains power delivered to the element is not equal to the power displayed on the front panel of the controller, as the device is continually monitoring the mains voltage level and compensating for any slumps and surges that may occur.

In all power delivery modes the amount of mains power delivered to the element is calculated as shown below.

$$P_{Delivered} = P_{Displayed} \frac{P_{Ceiling}}{100} \frac{V_{-7.5\%}^2}{V^2}$$

Where:

$P_{Displayed}$ is the displayed power level (*Power Display*).

$P_{Ceiling}$ is the power ceiling (currently 100% for all models).

$V_{-7.5\%}$ is the nominal line voltage less 7.5% (e.g. 213V for 230V device).

V is the current line voltage.

$P_{Delivered}$ is the actual amount of mains power delivered to the element. Actual power delivered should be constant for constant power displayed.

RESOLUTION AND DUTY CYCLE

Power to the element is controlled with a triac and switched only on mains zero crossings to maximise electromagnetic compatibility.

When in *Baby Mode*, the power is controlled to a resolution of 1%. Power is delivered in an optimally smooth pattern of mains pulses which repeats every 2 seconds at 50 Hz (1.7 seconds at 60 Hz). This even power control helps to reduce ripple in the baby's skin temperature. The power level is automatically adjusted ten times every second.

2.3 CONTROL PANEL

2.3.1 ALL INFANT WARMER MODELS

LIGHT INDICATOR AND BUTTON	The Light Button toggles the examination light off and on. The Light Indicator is lit when the light is on and extinguished when the light is off. If the light fails during use a short tone will sound and the light indicator will extinguish. If the light is turned on with a faulty bulb, the indicator will turn on, there will be a short tone and the indicator will extinguish.
PREWARM INDICATOR AND BUTTON	The Prewarm Button begins <i>Prewarm Mode</i> . The Prewarm Indicator will be lit if the button is pushed.
MANUAL INDICATOR AND BUTTON	The Manual Button begins <i>Manual Mode</i> . The Manual Indicator will be lit if the button is pushed.
APGAR INDICATOR AND BUTTON	The Apgar Button starts an Apgar timer with Apgar tones at 1 min, 3 min (optional), 5 min, and 10 min. The indicator lights while the Apgar timer is active to help distinguish it from a count down timer. The Apgar timer will blank at 60 minutes. Re-pressing the button will clear the timer.
TIMER DISPLAY	Displays the current time of the Apgar timer, timer 1 and timer 2 when they are active. Also used by Information Mode.
BABY SKIN TEMPERATURE DISPLAY	Displays the current baby skin temperature when a skin sensor is inserted in <i>Manual Mode</i> or <i>Baby Mode</i> . Displays 'HI' if the temperature exceeds 50°C. Displays '---' in the event of a sensor disconnect alarm. Blanks when in <i>Prewarm Mode</i> or when no skin sensor is inserted in manual mode.
POWER DISPLAY	Displays the current output power level in the range 0% to 100% in 5% steps.
CONTROL KNOB	Adjusts set temperature in <i>Baby Mode</i> and set power level in <i>Manual Mode</i> . Adjusts preset start times when either the Timer 1 Button or the Timer 2 Button is held down (IW910, IW93x & IW980 only). Also used in Information Mode (see Section 2.5).

2.3.2 IW910, IW93X, AND IW980 SERVO CONTROL MODELS

BABY INDICATOR AND BUTTON	The Baby Button begins <i>Baby Mode</i> . The Baby Indicator will be lit if the button is pushed.
TIMER1 BUTTON	Starts Timer 1 at the preset start time. Holding the button down allows the Timer 1 preset start time to be adjusted with the control knob. Re-pressing the button will clear the timer.
TIMER2 BUTTON	Starts Timer 2 at the preset start time. Holding the button down allows the Timer 2 preset start time to be adjusted with the control knob. Re-pressing the button will clear the timer.
MUTE BUTTON	Inactive unless one of the following alarms is active: Sensor Disconnect alarm, High Temperature alarm, Low Temperature alarm and Check Baby alarm. In each case pressing the Mute Button silences the audible alarm (for 10 minutes) and in the case of the Check Baby alarm it cancels the visual alarm as well (for another 15 minutes).
SET TEMPERATURE DISPLAY	Displays the current set temperature when in <i>Baby Mode</i> . Blanks in <i>Prewarm Mode</i> or <i>Manual Mode</i> . Also used by Information Mode.

2.4 ALARMS

2.4.1 IW910, IW93X AND IW980 SERVO CONTROL MODELS

CHECK BABY ALARM

In *Baby Mode* this alarm means the output power has been at 100% for at least 15 minutes indicating that the baby is slow rising to the set temperature and should be checked. In *Manual Mode* this alarm means the output power has been above 25% for at least 15 minutes indicating that the baby should be checked.

HIGH SKIN TEMP. ALARM

In *Baby Mode* this alarm means the baby skin temperature exceeds the set temperature by at least 1.0°C. In *Prewarm Mode* or *Manual Mode* this alarm means the baby skin temperature exceeds 39°C.

LOW SKIN TEMP. ALARM

In *Baby Mode* this alarm means the set temperature exceeds the baby skin temperature by at least 1.0°C. This alarm is not active in *Prewarm Mode* and *Manual Mode*. This alarm is disabled for 15 minutes each time baby mode is started and re-enabled each time the skin temperature gets within 0.5°C of set temperature.

SENSOR DISCONNECT ALARM

In *Baby Mode* this alarm means a problem has been detected with the skin temperature sensor. This may mean: (a) If '---' is flashing on the Baby Skin Temperature Display the sensor plug is not inserted fully into the socket, and/or (b) that one of the thermistor beads within the DuoSense™ skin sensor does not agree with the other so that the sensor can no longer be considered accurate. A bead mismatch alarm occurs within 25 seconds of the sensor being plugged in. Both meanings apply in *Baby Mode*, meaning (b) only applies in *Manual Mode* and neither apply in *Prewarm Mode*.

2.4.2 IW920, IW95X AND IW990 MANUAL CONTROL MODELS

CHECK BABY ALARM

This alarm has three meanings:

(a) *Manual Mode 15 Minutes*

The infant warmer has been running in *Manual Mode* at over 25% power for more than 15 minutes. The baby should be checked.

(b) *Skin Temperature > 39°C*

This alarm is accompanied by a flashing Baby Skin Temperature Display (which is > 39°C). The baby should be checked.

(c) *Skin Sensor Faulty*

The DuoSense™ skin sensor feature of the infant warmer has detected a fault with the skin sensor. This alarm is accompanied by a flashing Baby Skin Temperature Display. Ensure that the skin sensor is fully plugged in. If skin sensor is faulty then discard it.

2.4.3 ALL MODELS

SEE MANUAL ALARM

If the LED is flashing then the software has detected a hazard, has shut down the heater and entered this alarm state. If the warmer is able to power up again an error code corresponding to the meaning of the alarm can be obtained with use of the Information Mode (the error code is preserved in non-volatile memory).

If the LED is on constantly and is accompanied by a rapidly pulsing two-tone alarm then the hardware watchdog circuit has detected a micro-controller failure.

If the LED is on constantly and is accompanied by a constant tone then the overheat protector in the heater has tripped.

POWER FAIL ALARM

When this alarm is flashing the power to the warmer has failed.

NOTE: that this may mean the power switch (located on the front panel) is on while the power at the supply wall outlet is switched off.

2.5 INFORMATION MODE

Information Mode allows additional information about the warmer to be obtained by the front panel controls and displays. Information mode is intended for use by technical personnel only and should not be used while the warmer is in use. Information mode is used for calibration and diagnostics.

ENTERING INFORMATION MODE

Depress one of the power mode buttons (Prewarm, Manual or Baby) and hold it down. Rotate the control knob in any direction for two complete revolutions. Continue rotating the control knob slowly in the same direction, the mode indicator light will extinguish at one point. If this point is passed the indicator will come back on, rotate the knob back until the point where the indicator is extinguished is reached. Then release the button.

NOTE: If the option is enabled which requires the Baby Button to be held down to change Set Temperature then the Baby Button can not be used to enter information mode.

EXITING INFORMATION MODE

Press one of the power mode buttons (Prewarm, Manual or Baby).

USE OF INFORMATION MODE

The Set Temperature Display shows the engineering information number (EIN) which indicates what information is being displayed. The control knob adjusts the Engineering Information Number (EIN). The Timer Display shows the selected item of information.

AVAILABLE INFORMATION

EIN Meaning of the Timer Display

0 Device configuration (see below for a list of configurations).

1 ROM software version x100 (e.g. 0230 is version 2.30).

2 Present power level (%) in 1% steps.

3 Patient temperature x100 (e.g. 3670 is 36.70°C).

NOTE: 0401 is displayed when the skin sensor is disconnected.

4 Over Temperature reference calibration x100 (e.g. 3950 is 39.50°C).

5 Line voltage as a % of the unit's nominal voltage.

6 Preset options (see below for a list of the options).

7 Error code for last flashing See Manual alarm (see section 2.6 for a list of the possible error codes).

EIN #0 shows the device configuration. The possible configurations are:

Num. Model

0 Used for manufacture only.

1 IW910, IW93x or IW980 Baby Control Infant Warmers.

2 IW920, IW95x or IW990 Manual Control Infant Warmers.

CONFIGURATION NUMBERS

Num. Model

PRESET OPTIONS

EIN #6 shows preset options set during manufacture, using one digit of the Timer Display per option (1 means enabled and 0 means disabled). The four digits A, B, C and D, from left to right, have the following meanings:

Digit Option

A Must hold down the Baby Button to change Set Temperature.

B Full volume alarms.

C 3 minute Apgar tone.

D 15 minute Manual Mode alarm.

2.6 ERROR CODES

EIN #7 shows the error code corresponding to the last See Manual alarm. This value is kept in non-volatile memory and is updated every time a new error code occurs.

NOTE: Error codes are retained indefinitely and may only change when a new error occurs.

NOTE: Board level replacement of components must be done by qualified service personnel. A service manual and schematic diagram is required.

See section 2.5 for access to *Information Mode*.

The possible error codes are:

Code	Name	Meaning	Action
0	NONE	No error has occurred.	
1-2	TEMPERATURE MUX	Temperature multiplexer is not responding correctly. Temperature cannot be measured.	Check Q12, U11 and associated circuitry of temperature multiplexer in Control PCB for solder short or missing solder. Resolder as required. Replace Control PCB if error is still present.
5	BEADS SHORTED	The two thermistor beads in the DuoSense™ skin sensor are detected to have shorted together. The skin sensor should be checked. Using Figure 11.1.2, check that contact A is not shorted to contact B. If the skin sensor is operating correctly, then there may be a short circuit within the unit itself.	Check DuoSense™ skin sensor is operating correctly. If skin sensor is operating correctly, open front control panel and check patient probe connection socket for any short circuit. Repair or replace as required. Control PCB: Inspect for solder short or missing solder in Q12 and U11. Resolder as required. Check also for faulty connections. If error persists, replace Control PCB.
7	STACK OVERFLOW	The microprocessor stack has overflowed indicating microprocessor or memory failure. If fault occurs with a flickering display	Control PCB. Check U4, U5, and U8 for solder short or missing solder. Resolder as required. If error persists, replace Control PCB. Remove Power PCB. Inspect C22 for electrolyte leakage. Remove if found leaking. Check for electrolyte corrosion and continuity of PCB tracks near C22, R77 and R78 (especially the plated thru holes), D12, and U14. Clean PCB of electrolyte and connect open circuit tracks. Fit in new C22. Return Power PCB to warmer and retest. Replace Power and/or Control PCB if fault persists.
11	BUTTON MUX	Button multiplexer is not responding correctly. Buttons cannot be sensed.	Check Control PCB for solder short or missing solder in U2 and U3 ICs. Resolder as required.

Code	Name	Meaning	Action
			<p>Check GND and 5V pins of U2 and U3.</p> <p>Check Q7 and R59.</p> <p>Replace any faulty component as required.</p> <p>If error persists, replace Control PCB.</p>
13	BAD FREQUENCY	Bad Frequency (the device could not sense the frequency of the mains power supply at power up).	<p>Change mains wall power outlet.</p> <p>If error still detected, check Power PCB. Inspect for solder short or missing solder in U14, D28, Q26 and U17. Resolder as required.</p> <p>If error persists, replace Power PCB.</p>
14	FAILED ADC	One of the regular series of ADC conversions failed to complete in the normal time. This suggests that the internal hardware on the microcontroller has failed and the temperature readings along with other readings can no longer be relied on.	<p>Check Control PCB for solder short or missing solder in U4, U11 and U12. Resolder as required.</p> <p>If error persists, replace Control PCB.</p>
15	LED TOGGLE	Bad LED Toggle (the display driver, U1, which drives the LEDs and displays and scans the buttons was detected to be faulty).	<p>Check Control PCB for solder short or missing solder in U1, U18, Q3, Q4, Q5, Q28, R58, R10 and R106 and resolder as required.</p> <p>If error persists, replace Control PCB.</p>
16	BUFFER OVERFLOW	Serial Buffer Overflow (the RS232 output serial communications buffer was detected to have overflowed).	<p>Check Control PCB for bad solder joint in U6 and other passive components in periphery. Resolder as required.</p> <p>Measure voltage at pin 8 of U6, should be approximately -9V in idle state when not connected to a PC, while the voltage at pin 7 of U6 should be approximately 9V in idle state when not connected to a PC.</p> <p>Replace U6 if found faulty.</p> <p>If error persists, replace Control PCB.</p>
17	MISSING PULSES	<p>Missing Triac Firing (the triac which controls power to the element was sensed as delivering insufficient/uncontrolled power to the element).</p> <p><i>NOTE:</i> This error may mean the one of the backup hardware circuits has independently detected a fault and disconnected power from the element.</p>	<p>Check upper and lower head harness connectors for discolouration/burn marks. Replace if burnt or damaged.</p> <p>Check heater element resistance. (100/110V models: 32 ohms +/-2%; 230V model: 117 ohms +/-2%). Replace if out of specification.</p> <p>Check heater element connectors for presence of carbon build up, fusing or burn marks. Replace if burnt or damaged.</p> <p>Replace Power PCB if still faulty.</p>
18	SPURIOUS PULSES	Spurious Triac Firing (the triac which controls power to the element was sensed as delivering additional/uncontrolled power to the element).	<p>Change mains wall power outlet.</p> <p>If error still detected, perform E17 checks above; the fault location is the same.</p>

Code	Name	Meaning	Action
19	RELAY OUT	Relay Out (the relay which isolates the element in the event of continuous full power to the element or hardware watchdog failure is detected to have opened).	Check Power PCB for solder short or absence. Fix joint when necessary. Check closing of relays when switching 'ON' the device. Replace Power PCB. If symptom persists, replace Control PCB, microcontroller or watchdog circuit have gone faulty.
20-28	EEPROM ERROR	Non-volatile memory error (a problem was detected with the non-volatile memory - most of these errors can be recovered from by switching the device off then on again).	Perform checks as for E7 above.
30	NOT CONFIGURED	A device configuration is not selected. The device is configured during manufacture and cannot run if a particular model variant has not been set.	Device configuration in EEPROM has changed (non user-serviceable). Replace Control PCB.
31	STUCK BUTTON	One of the buttons is stuck down. This can be caused by holding one of the buttons down while the device is turned on.	Turn mains power switch off. Turn warmer on again, without touching control panel. If error code is still present, individually press each button on front panel and check that it makes a clicking sound. If it is okay and error still persists open front control panel. Remove Control PCB. Visually check each switch for being stuck or measure continuity with an ohmmeter (the meter should indicate an infinite value). Replace faulty tact switch as required. Check for solder short in U2 and U3 ICs. Remove solder short if present. Replace Control PCB if still faulty.
34	LIGHT CIRCUIT FAULTY	The light has been detected as turned on when it should be turned off. There is either a fault in the light control circuitry or the light sense circuitry.	Remove Power PCB. Check for solder short or missing solder. Resolder as required. Check F4, R88, R114, R115, Q20, Q27, D17, D29, U16, U17 and lamp continuity (white conductors in J8; pins 1 and 2). Replace component if faulty. Replace Power PCB if still faulty.
35	TEMPERATURE PROBLEM	Measurement from the temperature references are so far out of tolerance that auto-calibration of the skin sensor temperatures is impossible. It is likely that the temperature circuit is faulty.	Check Control PCB. Perform checks for E1-2 above. Also check U12. Replace Control PCB if error persists.
36	NOT CONFIGURED	Device configuration in EEPROM has changed (non user-serviceable).	Replace Control PCB.

Intentionally Blank

PART 3: SPECIFICATIONS

3.1 IW910 AND IW920 MOBILE INFANT WARMERS

3.1.1 ELECTRICAL SPECIFICATIONS

SUPPLY VOLTAGE AND CURRENT	230 V~ ± 20 V~ 120 V~	2.2 A~ maximum 4.2 A~ maximum
SUPPLY FREQUENCY	50/60 Hz	
NOMINAL POWER CONSUMPTION	510 W 510 W	230 V~ model 120 V~ model
HEATER POWER	450 W <i>Mattress irradiance is 32 mW/cm² at 100% heater power and 68 cm (26.8") heater grill to mattress distance</i>	
LIGHT POWER	20 W <i>Maximum intensity is 400 lux at 68cm (26.8") heater grill to mattress distance</i>	
TEMPERATURE RANGE		Set temperature from 34.5°C to 37.5°C in 0.1°C steps
TEMPERATURE MEASUREMENT		Displayed range of 4.0°C to 50.0°C in 0.1°C steps Sensor accuracy of ± 0.1°C Skin temperature control resolution of 0.01°C
TEMPERATURE SENSOR		Twin YSI 400 compatible thermistors with 100 MΩ insulation at 500V between all electrical contacts and the skin surface

3.1.2 MECHANICAL SPECIFICATIONS

HEIGHT	Adjustable from 151 cm to 191 cm (59.4" to 75.2") <i>To suit bassinets from 71 cm to 111 cm (28" to 43.7")</i>
WIDTH	65 cm (25.6")
DEPTH	110 cm (43.3")
WEIGHT WITHOUT ACCESSORIES	22 kg (48.5 lb)
MAXIMUM LOADING	4 kg (8.8lb) of Accessories, 26 kg (57.3 lb) total weight
HEATER HEAD ROTATION	-130° to +130° from centre position
CASTORS	5 x Ø 50 mm (2"), all locking

3.2 IW93X AND IW95X COSYCOT™ INFANT WARMERS

3.2.1 ELECTRICAL SPECIFICATIONS

SUPPLY VOLTAGE AND CURRENT	Voltage 230 V~ ± 20 V~ 120 V~	Controller only 2.2 A~ maximum 4.2 A~ maximum	Including Accessories 10 A~ maximum 12 A~ maximum
SUPPLY FREQUENCY	50/60 Hz		
POWER CONSUMPTION	1380 W [2300 W Pre-July 2012] 1200 W [1440 W Pre-July 2012] 510 W	230 V~ model 120 V~ model Controller and heater only	Including accessories (max)
HEATER POWER	450 W - Mattress irradiance is 32 mW/cm² at 100% heater power.		
LIGHT POWER	20 W - Maximum intensity is 400 lux.		
TEMPERATURE RANGE	Set temperature from 34.5°C to 37.5°C in 0.1°C steps		
TEMPERATURE MEASUREMENT	Displayed range of 4.0°C to 50.0°C in 0.1°C steps Sensor accuracy of ± 0.1°C Skin temperature control resolution of 0.01°C		
TEMPERATURE SENSOR	Twin YSI 400 compatible thermistors with 100 MΩ insulation at 500V between all electrical contacts and the skin surface		
AUXILIARY POWER OUTLET	2A max – For medical rated devices only (IEC60601-1) (Pre-July 2012)		

3.2.2 MECHANICAL SPECIFICATIONS

	ELECTRIC ELEVATOR MODULE		STANDARD FIXED HEIGHT OPTION	
	PLASTIC (PRE-JUNE 2008)	METAL (POST-JUNE 2008)	PLASTIC (PRE-AUGUST 2009)	METAL (POST-AUGUST 2009)
HEIGHT	Adjustable from 170 to 186 cm (67" – 73")		173 or 183 cm (68" or 72")	172 cm (68")
WIDTH	77 cm (30") - Excluding shelves			
DEPTH	110 cm to 129 cm (43" – 51") - Depends on accessories fitted, bassinet size and bassinet height		111 or 123 cm (44" or 48")	103 or 108 cm (41" or 43") - depends on bassinet size
WEIGHT WITHOUT ACCESSORIES	61 kg (134 lb)	67 kg (147 lb)	58 kg (127 lb)	55 kg (121 lb)
MAXIMUM LOADING	54 kg (119 lb) of accessories - Includes patient 115 kg (253 lb) total weight	73 kg (160 lb) of accessories - Includes patient 140 kg (308 lb) total weight	57 kg (125 lb) of accessories - Includes patient 115 kg (253 lb) total weight	85 kg (187 lb) of accessories - Includes patient 140 kg (308 lb) total weight
MATTRESS HEIGHT	88 to 104 cm (35" – 41")		91 or 101 cm (36" or 40")	91 cm (36")
HEATER GRILL TO MATTRESS	68 cm (27")			
HEATER HEAD ROTATION	-130° to +130° from centre position			
BASSINET SIZE (STANDARD)	65 x 65 cm (26" x 26") Standard Mattress size 62 cm x 62 cm (24" x 24")			
BASSINET SIZE (LONG)	65 x 75cm (26" x 30") Long mattress size 62cm x 72cm (24" x 28")			
BASSINET SIDE PANEL HEIGHT	17 cm (14 cm front & rear) – Measured from the bassinet 26 cm (23 cm front & rear) – With high side option			
BASSINET TILTING POSITIONS	-10° to +10° in ½° increments			
CASTORS	4 x Ø10 cm (4") all locking			

3.3 IW980 AND IW990 WALL MOUNT INFANT WARMERS

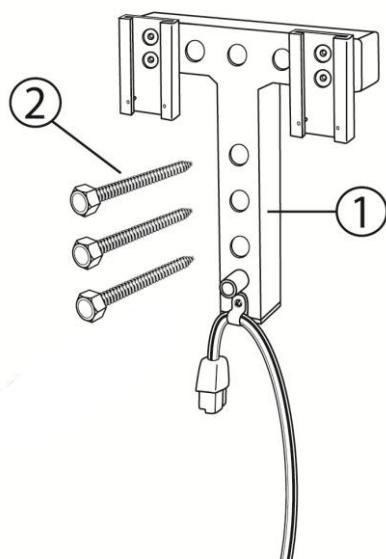
3.3.1 ELECTRICAL SPECIFICATIONS

SUPPLY VOLTAGE AND CURRENT	230 V~ ± 20 V~ 120 V~	2.2 A~ maximum 4.2 A~ maximum
SUPPLY FREQUENCY	50/60 Hz	
NOMINAL POWER CONSUMPTION	510 W 510 W	230 V~ model 120 V~ model
HEATER POWER	450 W	<i>Mattress irradiance is 32 mW/cm² at 100% heater power and 68 cm (26.8") heater grill to mattress distance</i>
LIGHT POWER	20 W	<i>Maximum intensity is 400 lux at 68cm (26.8") heater grill to mattress distance</i>
TEMPERATURE RANGE		Set temperature from 34.5°C to 37.5°C in 0.1°C steps
TEMPERATURE MEASUREMENT		Displayed range of 4.0°C to 50.0°C in 0.1°C steps Sensor accuracy of ± 0.1°C Skin temperature control resolution of 0.01°C
TEMPERATURE SENSOR		Twin YSI 400 compatible thermistors with 100 MΩ insulation at 500V between all electrical contacts and the skin surface

3.3.2 MECHANICAL SPECIFICATIONS

HEIGHT	36 cm (14.2")
WIDTH	20 cm (7.9")
DEPTH	76 cm (29.9")
WEIGHT WITHOUT ACCESSORIES	7.4 kg (16.3 lb)
HEATER HEAD ROTATION	-130° to +130° from centre position <i>Depends on installation</i>

3.3.3 INSTALLATION INSTRUCTIONS



043041135
WALL MOUNT BRACKET

1. Ensure the surface that the bracket is to be mounted on is vertically level and rigid; e.g. concrete wall, timber stud, steel girder/beam etc.

NOTE: Under no circumstances should the wall bracket be attached directly to plasterboard, drywall, or other non load bearing materials without sufficient internal wall reinforcement.

Mount the bottom edge of the wall bracket 56 cm (22") above the top surface of the bassinet mattress. This will achieve the recommended nominal height for the bottom of the head of 68 cm (26¾") above the mattress.

2. Affix the wall bracket (1) onto the wall using suitable fasteners (2) for the surface (e.g. for concrete use masonry anchor bolts, for timber use 75 mm wood screws). Use all six fastening holes. These are 6 mm (1/4") dia. with 14 mm (9/16") dia. clearance holes.

NOTE: When securely fastened, the fasteners must withstand a direct pull-out force of 370 N (83 pounds) per fastener. In addition, all fasteners must withstand a downwards shear force of 200 N (45 pounds) per fastener. The wall must be constructed to withstand a bending moment of 150 Nm (111 foot-pounds) which is applied to the wall bracket.

3.4 ENVIRONMENTAL SPECIFICATIONS

	OPERATING	TRANSPORT	STORAGE
TEMPERATURE	18°C to 30°C	-10°C to 50°C	-10°C to 50°C
HUMIDITY	0% to 90%RH	0% to 90%RH	0% to 90%RH

3.5 EQUIPMENT CLASSIFICATIONS

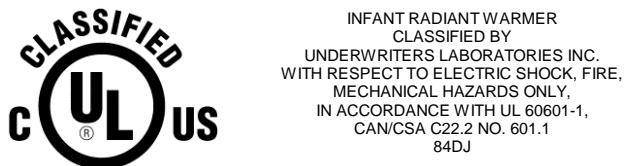
Class I Medical Electrical Equipment
Type B Applied Part (Bassinet)
Type BF applied part (Temperature Sensor)
Continuous operation
IP Classification: IPX0
Not suitable for use in the presence of flammable anaesthetics

3.6 STANDARDS AND APPROVALS

Designed to conform to the requirements of:

EN / IEC 60601-1
EN / IEC 60601-1-2
EN / IEC 60601-2-21
UL 60601-1
CAN/CSA C22.2 No. 601.1
AS/NZS 3200.1.0

For United States (120V) only:



For European Union only:



MDD Class IIb

3.7 MATERIALS STATEMENT

The IW900 series warmer and accessories do not contain patient contacting PVC devices plasticized with DEHP.

The IW900 series warmer and accessories do not contain latex.

3.8 EMC

- ⚠ The IW900 Series Infant Warmer needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information in Section 3.8.2 EMC Declaration.
- ⚠ Portable and mobile RF communication equipment can affect IW900 series Infant Warmer
- ⚠ The use of accessories, transducers, cables, temperature sensors & temperature sensor adaptors other than those listed below may result in increased emissions or decreased immunity of the IW900 series Infant Warmer.
 - Temperature sensors: 900IW001, NC02X, NC06X
 - Temperature sensor adaptor: 900IW003
- ⚠ The IW900 series Infant Warmer should not be used adjacent to or stacked with other equipment and if adjacent or stacked use is necessary the IW900 series Infant Warmer should be observed to verify normal operation in the configuration in which it will be used.

3.8.1 ESSENTIAL PERFORMANCE

The Essential Performance of the IW900 Series Infant Radiant Warmer is defined as providing controlled infra-red output and display of temperature within stated limits of accuracy, or entering an alarm state if this is not possible.

3.8.2 EMC DECLARATION

Guidance and manufacturer's declaration – electromagnetic emissions		
The IW900 series warmers are intended for use in the electromagnetic environment specified below. The customer or the user of an IW900 series warmer should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The IW900 series warmer uses RF Energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class A	The IW900 series warmers are suitable for use in all establishments other than domestic and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration – electromagnetic immunity			
The IW900 series warmers are intended for use in the electromagnetic environment specified below. The customer or the user of an IW900 series warmer should assure that it is used in such an environment.			
IMMUNITY test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be at least that of typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % U_T (>95 % dip in U_T) for 0,5 cycle 40 % U_T (>60 % dip in U_T) for 5 cycles <70 % U_T (>30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 s	<5 % U_T (>95 % dip in U_T) for 0,5 cycle 40 % U_T (>60 % dip in U_T) for 5 cycles <70 % U_T (>30 % dip in U_T) for 25 cycles <5 % U_T (>95 % dip in U_T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the IW900 series warmer requires continued operation during power mains interruptions, it is recommended that the IW900 series warmer be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note U_T is a.c. the mains voltage prior to application of the test level			

Guidance and manufacturer's declaration – electromagnetic immunity			
The IW900 series warmers are intended for use in the electromagnetic environment specified below. The customer or the user of an IW900 series warmer should assure that it is used in such an environment.			
IMMUNITY test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3 Vrms 150kHz to 80 MHz	3 V	<p>Portable and mobile RF communications equipment should be used no closer to any part of an IW900 series warmer, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1.2\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	10 V/m	$d = 0.35\sqrt{P} \quad 80 \text{ MHz to } 800\text{MHz}$ $d = 0.70\sqrt{P} \quad 800 \text{ MHz to } 2,5 \text{ GHz}$ <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range.^b</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
<p>NOTE 1 At 80 MHz and 800MHz, the higher frequency range applies.</p> <p>NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			
<p>^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which an IW900 series warmer is used exceeds the applicable RF compliance level above, the IW900 series warmer should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocation the IW900 series warmer.</p> <p>^b Over the frequency range 150 kHz to 80MHz, field strengths should be less than 3V/m.</p>			

Recommended separation distances between portable and mobile RF communications equipment and IW900 series warmers

The IW900 series warmers are intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the IW900 series warmers can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and an IW900 series warmer as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = \left[\frac{3.5}{E_1} \right] \sqrt{P}$	800 MHz to 2,5 GHz $d = \left[\frac{7}{E_1} \right] \sqrt{P}$
0,01	0.12	0.035	0.07
0,1	0.38	0.11	0.22
1	1.2	0.35	0.70
10	3.8	1.1	2.2
100	12	3.5	7.0

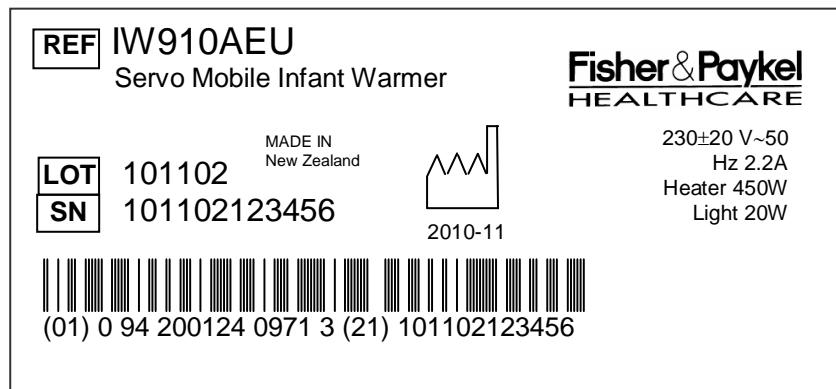
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

3.9 WARMER IDENTIFICATION

Infant Warmer serial numbers can be found on the back of the column immediately behind the control panel. The section of label pictured is typical of the information contained on a warmer label.



REF - This details the model number and code which identifies voltage, language and distributor specifics (see table below)

LOT - The production date: (10) = 2010, (11) = November, (02) = second day

NOTE: This is not specific to a particular warmer

SN - The serial number is specific to a particular warmer. The first six digits match the LOT number and the last six digits identify the specific product serial number.

The bar code consists of the following predefined application identifiers:

01	- Not used
0	- Sequence start
94	- Country of Manufacture - New Zealand
200124	- Company Identifier - Fisher & Paykel Healthcare
0971	- Product Code
3	- Check Sum

REF – the model and code is made up as;

Model	1	Voltage	2	Language	3	Distributor Option
IW910	A	230V ± 20V	D	Danish	A	Aust/NZ plug
IW920	J	120V	E	English	K	UK power plug
IW93x			F	French	U	Universal
IW95x			G	German	S	Swivel Head
IW960			L	Italian		
IW970			M	Finnish		
IW980			J	Japanese		
IW990			P	Polish		
			R	Russian		
			S	Spanish		
			T	Portuguese		
			N	Dutch		
			V	Norwegian		
			W	Swedish		
			Z	Chinese		

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PART 4: MAINTENANCE AND SERVICING

WARNING

 All maintenance should be undertaken by qualified service personnel.

4.1 MAINTENANCE SCHEDULE

Fisher & Paykel Healthcare recommend that the following Safety, Performance and Functional checks be performed at least annually for all models covered by this manual. It is important to follow hospital and local regulations if more frequent checks are stipulated.

NOTE: A maintenance check sheet is provided in 4.5.

4.1.1 EQUIPMENT

Depending on the extent of the service check and the accessories included on your warmer the following equipment may be required.

Safety Analyser:	IEC60601-1 or IEC62353, to class BF	
Thermometer:	30 – 40°C	± 0.1°C
Pressure Gauge:	0 – 100psi	± 5% fsd
Pressure Gauge:	0 – 100cm H ₂ O	± 2% fsd
Flowmeter:	0 – 15 L/min	± 5% fsd
Suction gauge:	0 – 200 mm Hg	± 2.5% fsd
Calibrated Voltmeter		

NOTE: For neoBLUE® mini phototherapy refer to 185043921 service manual.

NOTE: For neoweigh™ in-bed scales refer to 185045090 service manual.

NOTE: For Neopuff™ Infant Resuscitator refer to 185041597 service manual.

4.2 SAFETY CHECK

WARNING

⚠ Connect the power cord only to a properly grounded wall receptacle that is approved for hospital use and of the correct voltage. DO NOT use extension cords or an AC receptacle box for this device.

⚠ The unit should be tested to the current medical electrical standards for in-house testing for each specific country (example, refer to UL60601-1 for USA, EN60601-1 or IEC62353 for Europe, AS/NZS 3200.1.0 for Australia and New Zealand). This should be done prior to initial use and at least annually thereafter.

NOTE: To conduct an earth test, the test lead should be attached to a bolt located under a plastic cap at the top of the column – refer diagram 7.2.2 component 5.

NOTE: The Transport Handle of the CosyCot™ bassinet is not earthed but is protected in accordance with subclause 3.132 of IEC60601-1:2005. To verify safety, conduct a Patient Leakage Current test under normal operating conditions. The pass criterion is less than 0.1 mA AC.

NOTE: The parts shown in this technical manual are not all available for purchase as spare parts.

4.3 SYSTEM CHECK

This procedure is the recommended performance check for **Fisher & Paykel Healthcare Radiant Warmers**. A check of calibration is included.

ALARMS CHECK

1. Switch the Power Switch on. **Check** that the increasing pitch start up sound occurs and that the following alarm indicators, depending on the model, flash momentarily: Check Baby, High Temperature, Low Temperature, and Sensor Disconnect depending on model.

POWERFAIL CHECK

2. Test procedure for power fail alarm:

Turn 'ON' and power Warmer for at least 5 minutes to ensure full charging of the supercapacitor.

Turn 'OFF' warmer and unplug power cord from wall supply socket.

Turn the Warmer front panel power switch 'ON'. Check that the Power-Fail Indicator flashes and audible alarm sounds for at least **12 minutes**.

The additional 2 minutes is to allow for variation amongst capacitors and differing operating conditions that may occur amongst warmers.

If the Power-Fail alarm operates for less than 12 minutes, the Power-Fail supercapacitor will need to be replaced as it may have insufficient charging ability to provide an alarm time of at least 10 minutes by the time of the next annual check.

Replacement supercapacitors may be ordered through your Fisher & Paykel Healthcare representative using the following part number:

Part # 311040682 (SuperCap 1F 5.5V HT)

Alternatively, you may order a replacement Power PCB:

120V, Part # 043041004 PCB Assy Power IW900 120V

230V, Part # 043041003 PCB Assy Power IW900 230V

STUCK BUTTON

3. Press and hold Prewarm/Standby Button. Reconnect the power cord to the wall supply. **Check** that the warmer starts correctly and that the See Manual indicator flashes and audible alarm sounds. Release the Prewarm/Standby Button.

NOTE: This check causes a Stuck Button error to occur which will be logged as the last error that occurred as accessible via *Information Mode*.

4. Switch the Power Switch off then on again. **Check** that the warmer starts up normally.
5. Enter *Information Mode* (refer section 2.5) and select *EIN #5*.
6. Ensure that the light is off. Measure the mains voltage at the wall outlet supplying the warmer, using a calibrated voltmeter.
7. Calculate and record the measured voltage as a percentage of the devices nominal supply voltage which will be 100V, 120V or 230V.
8. **Check** that the top display reads the calculated percentage ($\pm 5\%$).
9. Select *EIN #4*.
10. **Check** that the top display reads 3950 ± 20 ($39.50 \pm 0.2^\circ\text{C}$). Exit *Information Mode*.

- LIGHT CHECK 11. Press the Light Button, **check** the light turns on. Re-press the Light Button and **check** that the light turns off.
- POWER MODE CHECK 12. Press each power mode button (Prewarm, Manual, Baby if applicable) and **check** that its respective indicator is lit when the button is pressed.
- TIMER MODE CHECK 13. Ensure that the Timer Display is blanked. Press the Apgar Button and **check** that the Apgar Indicator is lit and the time display starts counting. Press the Timer 1 Button and the Timer 2 Button in turn and **check** that the corresponding preset time for each appears on the Timer Display and that the time starts counting down.
- HEATER CONTROL 14. For all models:
 Select Manual Mode and set the output power level to 0% (all segments of the power bar are extinguished). Wait 1 minute and **check** that no heat is being given off by the element. Set the output power level to 100% (all segments of the power bar are lit).
- TEMPERATURE
MEASUREMENT 15. For all models:
 Check condition of skin sensor lead and sensor head. Connect a skin sensor to the infant warmer and immerse the sensor end in water that is warmed to a temperature in the range 35.0°C to 37.0°C. Use a calibrated thermometer to **check** the temperature on the Skin Temperature Display is accurate to within ± 0.2°C.
 To check warmer calibration only - 043042566 check probe may be used, refer to section 11.1.3
16. Switch the Power Switch off.

4.4 FUNCTIONAL CHECK

WARMER HEAD
Refer section 7.2.1.

1. Ensure the head is secure and that it can rotate smoothly. If required Head Pivot Nut (1) can be adjusted using a bent wire tool (171042012). If the central détente is not sufficiently positive, Washer Pivot (3) should be replaced.

MOBILE WARMERS
Refer to section 7.4.2.

2. Ensure everything is secure, in particular the stabiliser weight bolt (18) is tight and that the pole (10) is fully engaged into the warmer support bracket (1) and the stabiliser weight (13).

COSYCOT™ BASE
Refer to section 9.1.3

3. Ensure all four base to column bolts (43) are fully tightened 12-14Nm. Check castors roll and lock. Check that the castors are fully screwed into the base. Check all circlips are present (elevator base only).

ELECTRIC ELEVATOR
(If fitted)
Refer to section 9.1.3

4. Check operation of up/down buttons (22) and safety interlock rocker switch (23). Inspect underside of base assembly for any sign of damage or wear. Grease centre boss of base if required.

BASSINET MOUNTING
ASSEMBLY
Refer to section 8.2.2

5. Ensure that the bassinet pivot bolts (5) and arm mounting bolts (19) are tight. Check the operation of the tilt mechanism for smooth movement and no slipping. Adjust brake operation as outlined in section 4.8.4 if required.

TRANSPORT HANDLE
Refer to section 8.3.2

6. Check operation of handle and release collars (4).

STORAGE DRAWER
(If fitted) Refer section 11.14.2

7. Ensure the drawer slides smoothly. If required clean and grease the sliders with a food grade, non-drying grease.

GAS SUPPLY MANIFOLDS
(If fitted)

8. Every six months the regulator output pressure (if fitted) should be verified with an independent pressure gauge to ensure $60\pm5\text{psi}$ ($414\pm34\text{kPa}$) (or $50\pm5\text{psi}$ in USA) is maintained. The adjustment procedure is detailed in section 10.2.2. Test for leaks annually using the procedure outlined in section 10.2.1.

GAS HOSES
(If fitted)

9. Check for any visual signs of wear, damage or deterioration to the gas hose and o-rings, and ensure there is no movement of crimped components away from the hose. Exchange gas hoses as per national or hospital regulations and guidelines.

FLOWMETERS
(If fitted)

10. Perform a visual operation check and flow test at 8LPM. For further information refer to the Amvex Corporation Flowmeter User Manual.

SUCTION
(If fitted)

11. Refer to manufacturers manual for maintenance & servicing requirements.

UPS (UNINTERRUPTABLE
POWER SUPPLY)
(If fitted)
Refer to section 11.12 for UPS
mounting.

12. Check operation of the UPS:

- Ensure that UPS has been fully charged for > 24 hours.
- Set the CosyCot™ to manual mode.
- Dial the control knob clockwise until the power bar displays 100%.
- Disconnect the UPS from the mains supply.
- The UPS should indicate battery status via the Battery Monitor LED's and emit an audible tone.
- Ensure that the UPS battery is able to power the warmer for > 8 minutes.
- Recharge the UPS for > 24 hours before returning to service.

Refer to the PowerVar UPS operating manual supplied with the unit for maintenance, troubleshooting, and technical support.

4.5 RECOMMENDED MAINTENANCE CHECKLIST

This sheet can be copied and used to keep a record of the maintenance procedures carried out on your Fisher & Paykel Healthcare 900 series Infant Warmer.

Model	IW	Serial number			
	Checks Required		Result	Units	Detail
System Checks					
Mobile & Wallmount & Cosycot™	Alarm indicator check				
	Power fail alarm check		mins	>12	
	Stuck button check				
	Calibration Check EIN #5				value within \pm 5 of calculated percentage
	Calibration Check EIN #4				3950 \pm 20
	Light check				
	Power mode check				
	Timer mode check				
	Heater control				No heat <input type="checkbox"/> 100% heat <input type="checkbox"/> Segments <input type="checkbox"/>
	Temperature measurement check		°C		\pm 0.2°C of test water temperature
Warmer calibration test using check probe (if available)		°C			36.7 \pm 0.1°C (043042566)
Functional Checks					
Cosycot™	Head pivot securing nut check				
	Security of stabiliser weight bolt (mobile only)				Spring washer fully deformed
	Security of column bolts		Nm		12-14 Nm
	Check castors roll & lock & are fully screwed into base				
	Check all circlips are present in elevator base				
	Electric elevator check				
	Arm pivot actuator check				No bending evident
	Bassinet mounting check				Ensure bolts are secure & tilt mechanism secure
	Transport handle check (as fitted)				
	Storage drawer check (as fitted)				
	Storage bins check (as fitted)				
	Gas Supply Module regulator output pressure OXYGEN	psi			60 \pm 5 psi (414 \pm 34kPa) {50 \pm 5psi USA}
	Gas Supply Module regulator Output AIR	psi			60 \pm 5 psi (414 \pm 34kPa) {50 \pm 5psi USA}
	Gas Supply Module leak check OXYGEN				No cylinder gauge movement in 15 mins
	Gas Supply Module leak check AIR				No cylinder gauge movement in 15 mins
	Other low pressure gas accessories leak check	psi			< 4 psi in 15 minutes
	Gas Hoses				
	Flowmeters accuracy - test flowmeter at 8 LPM	LPM			7.5 - 8.5 LPM
	Suction check				Refer to suction device documentation
	Neopuff™				Refer to Neopuff™ Service Manual 185041597
All	UPS run time check	mins			> 8mins
	Phototherapy lamp output check				Refer to phototherapy lamp documentation
	Low flow microblender checks				Refer to microblender documentation
	Electrical Safety				
All	Earth Resistance	Ω			As per IEC60601-1 or IEC62353 (< 200mΩ)
	Earth Leakage	µA			As per IEC60601-1 or IEC62353 (< 5000µA)
	Patient Applied Part Leakage (900IW001/900IW003/NC020)	µA			As per IEC60601-1 or IEC62353 (< 100µA)

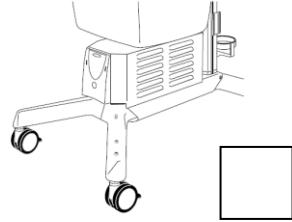
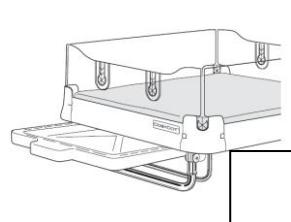
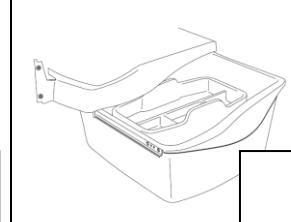
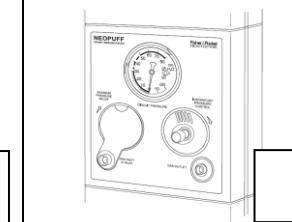
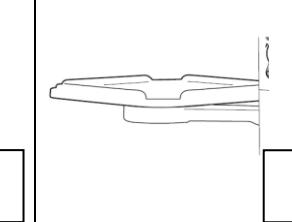
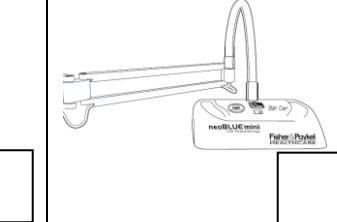
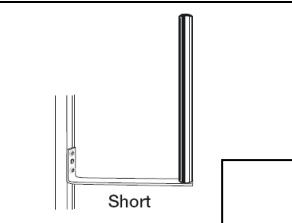
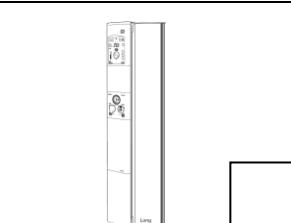
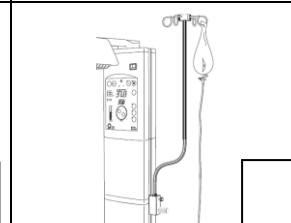
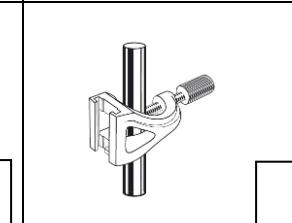
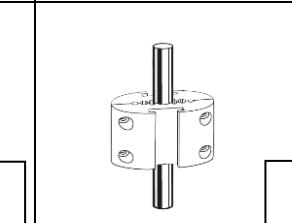
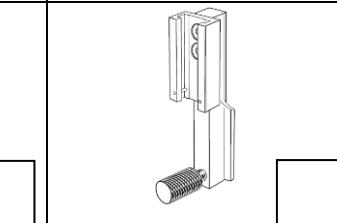
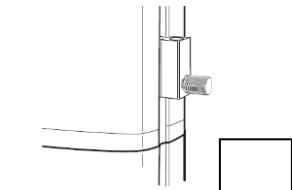
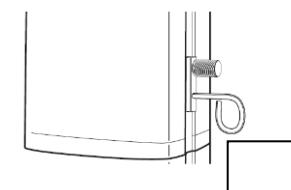
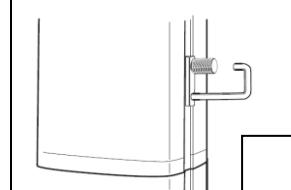
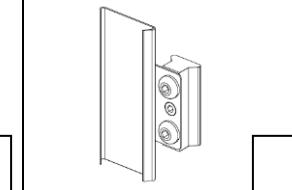
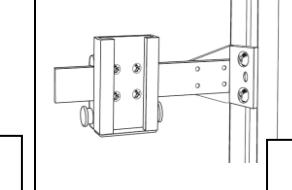
Technician	
Technician Signature	
Date	

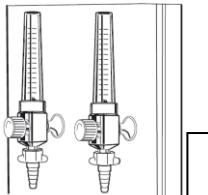
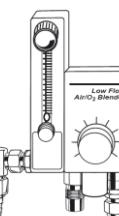
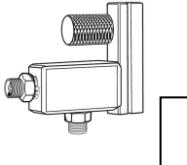
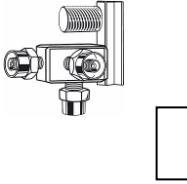
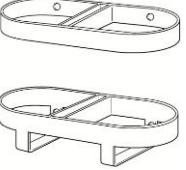
4.6 ACCESSORY WEIGHT REFERENCE LIST

The purpose of this sheet is to enable you to see how your cots are accessorised. This sheet can be copied and used to keep a record of your total accessory weights for each IW93x / IW95x CosyCot™ Infant Warmer in your inventory.

WARNING

- ⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
- ⚠ Where possible, evenly distribute the weight of accessories on both sides of the unit.

					
Uninterruptable Power Supply (UPS) – 21.64kg (47.71lb)	X-Ray Tray – 3.18kg (7lb)	Storage Drawer – 3.7kg (8lb)	Neopuff™ Module – 0.39kg (0.68lb)	Side Shelf – 1.59kg (3.51lb)	neoBLUE™ mini – 2.31kg (5.08lb)
 Short	 Long				
Short Mount Pole – 0.58kg (1.29lb)	Long Mount Pole – 1.84kg (4.06lb)	IV Pole – 0.53kg (1.16lb)	C-Clamp – 0.39kg (0.85lb)	Pole Clamp – 0.37kg (0.81lb)	Dovetail Channel Bracket – 0.14kg (0.31lb)
					
Side Mounting Block – 0.17kg (0.37lb)	Accessory Hook – 0.09kg (0.20lb)	Cable Hook – 0.10kg (0.22lb)	Suction Canister Mount 0.09kg (0.20lb)	Gas Blender Bracket – 0.23kg (0.52lb)	Gas Blender Bracket – 0.25kg (0.7lb)

 O2/Air Flow Meter Module – 0.58kg (1.27lb)	 O2/Air Flow Meter – 0.22kg (0.49lb)	 Venturi Suction – 0.65kg (1.44lb)	 Gas Blender – 1.55kg (3.43lb)	 Vacuum Regulator – 0.49kg (1.1lb)	 O2/Air Regulator – 0.53kg (1.16lb)
 Suction Block – 0.51kg (1.12lb)	 O2/Air Accessory Block – 0.65kg (1.44lb)	 O2/Air Supply Module – 5.66kg (12.48 lb)	 O2/Air Low Pressure Module – 1.73kg (3.798lb)	 Gas Hose – 0.14kg / m + 0.14kg (0.3lb / m + 0.3lb)	 Gas Cylinder Rack – 1.31kg (2.89lb)
 Neoweigh -8.22 kg (18.13lb)	 Neospot -1.78 (3.93lb)				

4.7 SERVICE PROCEDURES- REPLACEMENT

CAUTION Anti-Static procedures must be observed when handling printed circuit boards (PCB's). Qualified service technicians should carry out all servicing.

4.7.1 REPLACEMENT OF HALOGEN LAMP

- a. If the warmer has been running then allow one hour for the heater and lamp to cool.
- b. Unplug the mains cable which supplies power to the unit. Turn off the UPS if installed
- c. Remove the front and rear screws which secure the lower case to the upper case.
- d. Support the front of the head and pull both sides of the lower case down to open.
- e. Pull the halogen lamp out. Using gloves to protect the new lamp, install by pushing into receptacle. Use only 12V 20W 50 mm halogen lamps (Fisher & Paykel part # 424040069).
- f. Close the lower casing of the head and press along both sides to ensure it is clipped firmly into place.
- g. Replace the securing screws.

4.7.2 REPLACEMENT OF CONTROLLER FUSES

- a. Unplug the power cable from the wall supply outlet. Turn off the UPS if installed.
- b. Remove the four screws that secure the front control panel to the column (located behind the column).
- c. Pull the front panel away from the column until the printed circuit boards are revealed.
- d. Disconnect J12 (ribbon cable) from the control PCB. Disconnect J3 (ribbon cable) from the power PCB. Disconnect J6 and J13 (power switch) from the power PCB. Remove the front panel.
- e. Controller fuses F1, F2, F3, F4 and F5 are located on the power PCB. Replace as necessary.
- f. Hold the control panel beside the column and reconnect connectors J12, J3, J6 and J13. .
- g. Replace the front panel checking that it does not interfere with any wiring harnesses, in particular ribbon cable (7) on controller assembly diagram 7.2.2
- h. Replace the four screws.

4.7.3 REPLACEMENT OF SUPPLY PCB FUSES (IW93X & IW95X MODELS ONLY)

These include fuses for the Electric Elevator Module (if fitted), the Power Outlet (if fitted) and any accessories that may be fitted. Refer to the photo in section 6.4.3 for fuse positions.

- a. Unplug the power cable from the wall supply outlet. Turn off the UPS if installed.
- b. Remove the four screws that secure the power inlet/outlet module to the column (located behind the column).
- c. Supply PCB fuses F1, F2, F3, F4 and F5 are located on the back of the Inlet/Outlet Module. Fuse F4 is common to all of the accessories; fuse F1 is for the Electric Elevator Module, fuse F5 is for the outlet socket and fuse F2 and F3 are for other accessories.
- d. Replace the power inlet/outlet module including the four retaining screws.

4.7.4 REPLACEMENT OF PRINTED CIRCUIT BOARDS

Refer to photos in section 6.4 for PCB component identification. PCB's are not repaired, and individual electronic components are not available. Replacement PCB's are available – refer to section 6.4 for spare part order numbers.

- a. Carry out steps a. to d. of section 4.7.2.
- b. To remove the control PCB from the front panel disconnect J2 (skin sensor) then release the plastic clips beginning with the ones down the right hand side as viewed from the back.
- c. To remove the power PCB from the column disconnect J8, J7, J10, J9 then remove phase and neutral from J5. Unscrew the two 4mm self-tapping screws holding the heat sink to the column.
- d. When replacing the power PCBs ensure it is securely held in the column extrusion groove on the right hand side and by the two screws in the heat sink. Ensure that all of the 7 plastic clips/connectors on the control PCB are secure.
- e. When replacing the control PCB into the front panel, first remove the control knob (from the front panel) so that it can be re-aligned to the rotary encoder on the control PCB afterwards.

4.7.5 REPLACEMENT OF BALANCE SPRING (IW910 AND IW920 MODELS ONLY)

- a. Unscrew plastic locking nut on adjustable pole, and remove upper pole with heater and controller.
- b. Remove spring from lower pole.
- c. Replace spring and refit upper pole.

4.7.6 REPLACEMENT OF CASTORS (IW910 AND IW920 MODELS ONLY)

- a. Grip castor and pull out of mobile base.
- b. Push new castor home into castor hole.

4.7.7 REPLACEMENT OF CASTORS (IW93X AND IW95X MODELS ONLY)

- a. Use a 17mm spanner to loosen castor.
- b. Lock castor and unscrew from leg.
- c. Lock replacement castor and screw into leg.
- d. Tighten with a 17mm spanner.

4.7.8 REPLACEMENT OF BASSINET CORNER CAPS (IW93X & IW95X MODELS ONLY)

Refer to Bassinet Assembly diagrams Section 8.1.2

- a. Remove all relevant side panels. Unscrew bolt (17) using a 5mm Allen key. For the front two corners the rear handle (9) should be removed from each corner prior to unscrewing bolt (17).
- b. When fitting a replacement plastic corner cap (5), ensure the two lugs locate under the top surface of the corner block (3). Tighten bolt (17) to a torque of 3Nm.
- c. Replace rear handle (9).

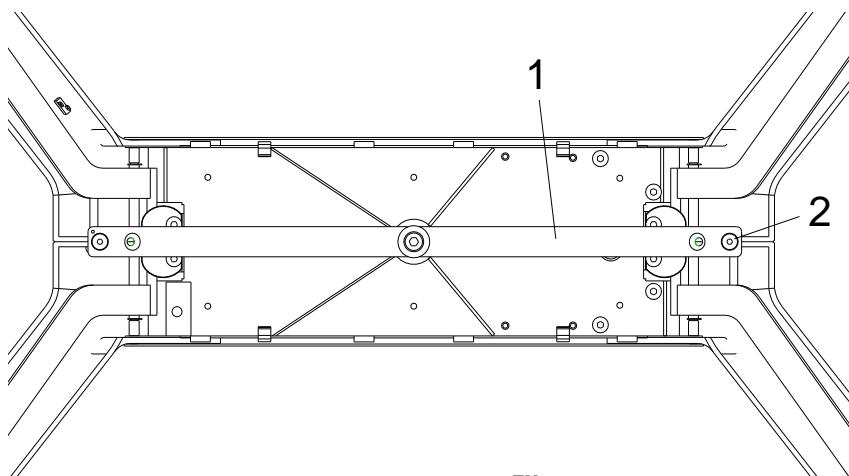
4.8 SERVICE PROCEDURES – ADJUSTMENT

4.8.1 INFANT WARMER SETUP PROCEDURE FOR BASE SERVICING

- a. Disconnect all power and gas from the warmer and remove UPS modules, Side shelves, phototherapy lamps, gas cylinders and any other loose apparatus on the warmer.
- b. Push the warmer from the front until the rear castors swivel round underneath the rear legs. Lock the rear castors.
- c. Stand behind the column and swing the head over to one side before carefully pulling the warmer column towards you so that the entire warmer pivots on the locked rear castors. Pre-position two chairs or stools in line with the column with one stool close to the base and gently lower the column onto them so that the entire warmer rests on the back of the column and no weight is on the base. Ensure the warmer cannot tip sideways when resting on the chairs/stools.

4.8.2 PRE-SET BASE HEIGHT ADJUSTMENT (IW93X AND IW95X MODELS WITH PRESET BASES ONLY)

- a. Pre-set bases manufactured after August 2009 are cast in a single piece; no adjustment is possible.
- b. Preset bases manufactured prior to August 2009 can have the bassinet height adjusted to 90.5 or 100.5 cm (35.6" or 39.6"). Refer to Figure below. Using a 5mm Allen key remove the two M8x25 screws (2). Pull the legs together until the other set of holes on the base adjustment bar (1) line up with the holes on the legs. Replace the M8 screw and fully tighten. There are only two adjustment points for this system.



Underside of preset CosyCot™ Warmer Base

4.8.3 BASE LEVEL ADJUSTMENT (IW93X AND IW95X MODELS WITH ELEVATOR BASES ONLY)

If the base or column are not level, then adjustment of the straight tie rod is required. The straight tie rod is located underneath the base between the centre pivot and the rear legs.

- a. Undo the lock nut that secures the straight tie rod to the ball joints.
- b. In the middle of the rod is a flat section that should be used for adjustment. Use an 8 mm wrench to turn the rod. One full clockwise turn of the rod (thread M10 x 1.5) will lower the column down by approximately 10 mm. Hence, one full anti-clockwise turn of the rod will lift the column end up by approximately 10 mm.
- c. Adjust to level column and base.
- d. Tighten the lock nut.

NOTE: When the rod is assembled, the ball joints remaining threaded portions are:

Leg side: 5 mm (full length is 25 mm)

Pivot side: 10 mm (full length is 30 mm)

CAUTION A maximum of four full clockwise turns are allowed (remaining threaded portion 5 mm).

4.8.4 BASSINET BRAKE ADJUSTMENT

If the bassinet can be tilted without actuating the rear handle, or pulling the two handles together doesn't allow tilting of the bassinet, then the bassinet brake requires adjustment.

Adjustment is performed with the adjuster screw on the cable:

- a. Move the bassinet so that the handle is in the lowest position
- b. Loosen the lock nut on the adjuster screw.
- c. Wind the screw such that there is 2mm of play in the lower handle (winding it out will reduce the play).
- d. Tighten the adjuster screw lock nut.

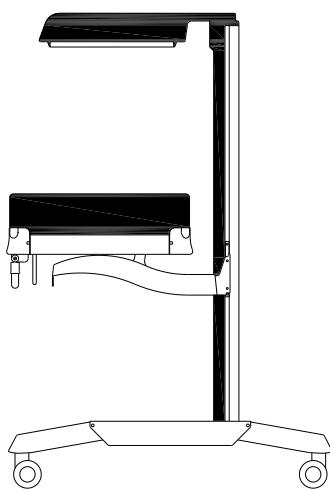
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PART 5: CLEANING

WARNING

-  To avoid the possibility of burns when performing cleaning procedures, ensure the Infant Warmer is disconnected from the power supply and the heater element is allowed to cool for one hour, or until cool to the touch.
-  To avoid the possibility of electric shock hazard when performing cleaning procedures, ensure the Infant Warmer is disconnected from the power supply.
-  If the 900IW505x Battery Module is installed on the CosyCot™ Infant warmer, please ensure the 900IW505x Battery Module is powered off prior to cleaning. Do not remove the 900IW312x Battery Module Shroud during cleaning procedures. Ensure no part of the 900IW505x Battery Module is immersed in any cleaning agent.
-  Do not allow cleaning liquids or cleaning solutions to enter into electrical housings.
-  Do not allow cleaning liquids or cleaning solutions to collect around or enter into oxygen or air fitting.
-  Ensure all oxygen and air supplies are turned off and disconnected from the CosyCot™ Infant Warmer before performing cleaning procedures. Explosion and fire hazards can exist when performing cleaning procedures in an oxygen-enriched environment.

5.1 GENERAL CLEANING



Clean the Infant Warmer and accessories either weekly or between patients using the following cleaning procedures:

- Comply with hospital, local and national guidelines for product cleaning frequencies.
- Cleaning shall be performed at ambient conditions. Allow heated surfaces to cool for at least one hour or cool to the touch before cleaning.
- Before cleaning, remove and discard all used disposable products using the recommended method of disposal.
- Dust all surfaces with a clean damp soft cloth.
- Clean all plastic surfaces with detergent based solution (maximum 2% in water) ensuring the manufacturer's directions for use of the cleaning agent are followed.
- The plastic surfaces **highlighted in black** contain plastic components made from polycarbonate or acrylic, and include the entire heater assembly, bassinet side panels, column cap and front panel fascias.
- The following proprietary chemical cleaning wipes (and their manufacturer) are recommended if the highlighted plastic surfaces require cleaning for infection control purposes.

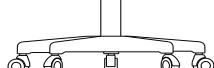
Tuffie (Vernacare)
Caviwipes (Metrex Research Corporation)
Sani-cloth HB (Professional Disposables, Inc.)
Asepti-Wipes II (Ecolab, Inc.)

- Dry all surfaces after cleaning with a clean soft cloth or paper towel.

CAUTION Ensure no part of the Infant Warmer or related accessories is immersed in any cleaning liquid or cleaning solution.

CAUTION Do not clean the infant radiant warmer heating element.

NOTE: The recommended chemical cleaning wipes listed above have been checked for long term compatibility with the IW900 Series Infant Warmers.



CAUTION Do not clean the highlighted plastic surfaces with proprietary cleaning products containing hydroxides, hypochlorites, peroxides, gluteraldehyde or cleaning products with a greater than 30% alcohol base.

CAUTION The chemicals used in these proprietary cleaning products may lead to discolouration, crazing and eventual cracking of the highlighted plastic surfaces.

Examples of proprietary cleaning products which contain such cleaning chemicals include but are not limited to:

Asepti-Wipes (Ecolab, Inc)
Clorox (The Clorox Company)
Endbac 256 (Johnson Wax Professional)
Quat (3M)
Sporiciden (Liberty Industries, Inc)
Sporox II (Sultan Healthcare)
Steris (Steris Corporation)
Terralin (Schülke & Mayr)
Virtek (A Virtek Company)
Virox (Virox Technologies)

CAUTION Do not use abrasive cleaning solutions.

CAUTION Ensure all Infant Warmers and accessories are checked before returning the Infant Warmer to service.

5.1.1 SKIN SENSOR

Clean the skin sensor with alcohol, or detergent or soap solution (maximum 2%) in water), ensuring the manufacturer's directions for use of the cleaning agent are followed.

Apply the cleaning solution with a clean cloth or sponge, and dry all surfaces after cleaning with a clean soft cloth or paper towel.

CAUTION

- Do not autoclave or gas sterilize the skin sensor.
- Do not pull on the sensor cup or sensor plug during cleaning or drying as the skin sensor may be damaged.
- Ensure the skin sensor is only removed from the controller by grasping the plug at the front panel. Ensure excessive strain is not placed on the sensor lead either during use, cleaning or inspection.

5.1.2 MATTRESS

Clean the mattress with an approved and correctly diluted disinfectant-detergent solution, ensuring the manufacturer's directions for use of the cleaning agent are followed.

Apply the cleaning solution with a clean cloth or sponge, and dry all surfaces after cleaning with a clean soft cloth or paper towel.

CAUTION

- Do not autoclave the mattress.

5.1.3 STERILISATION

CAUTION

- Do not autoclave or gas sterilize any part of the warmer
- For cold sterilization: Ensure the cold sterilization agents are safe for use with the relevant warmer surfaces.
- Do not expose plastic and acrylic surfaces to direct radiation from germicidal lamps. The ultraviolet radiation from these sources can cause crazing and cracking.

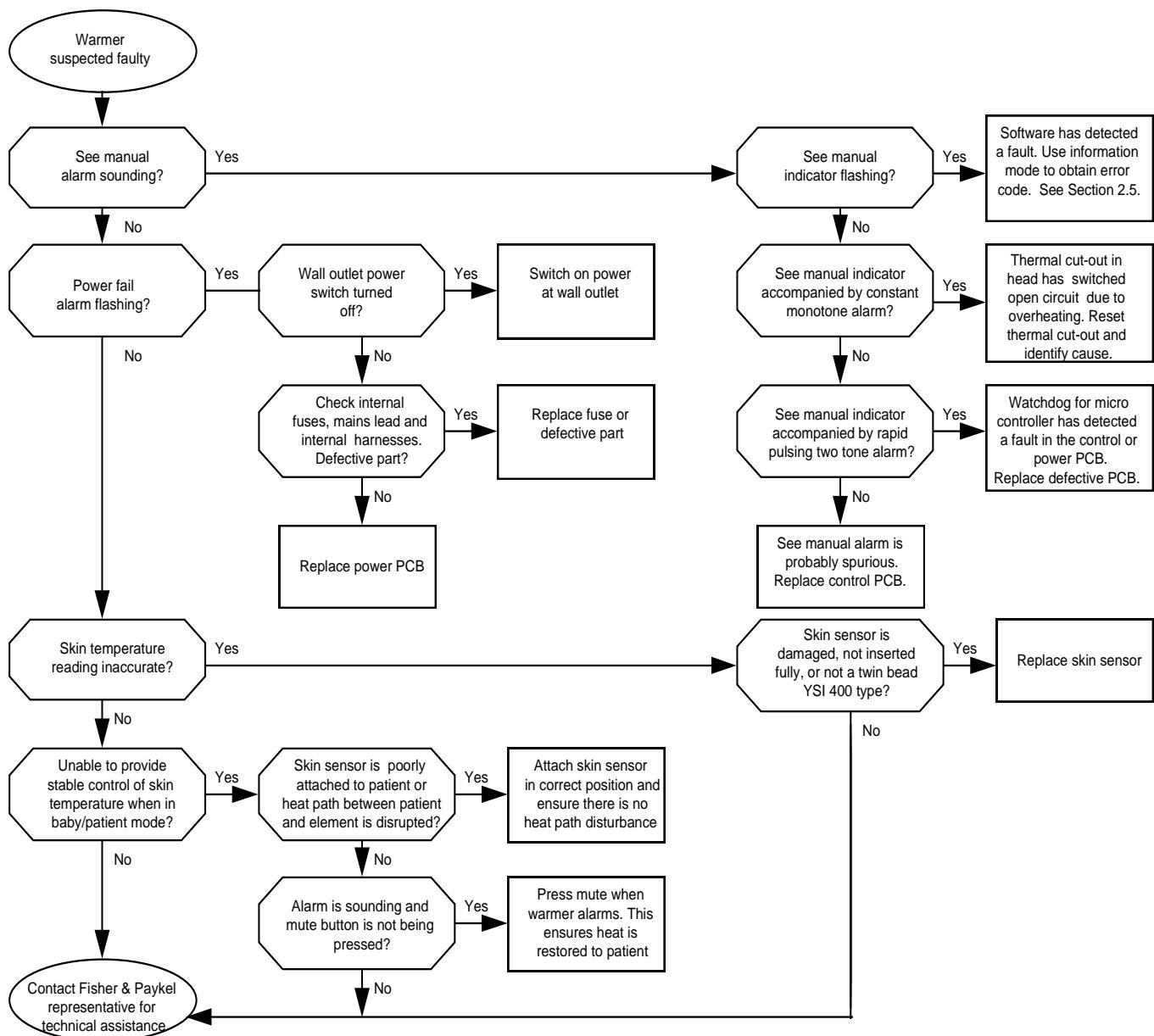
5.1.4 AFTER CLEANING

CAUTION

- Ensure all warmer parts and accessories are checked before returning the device to service.

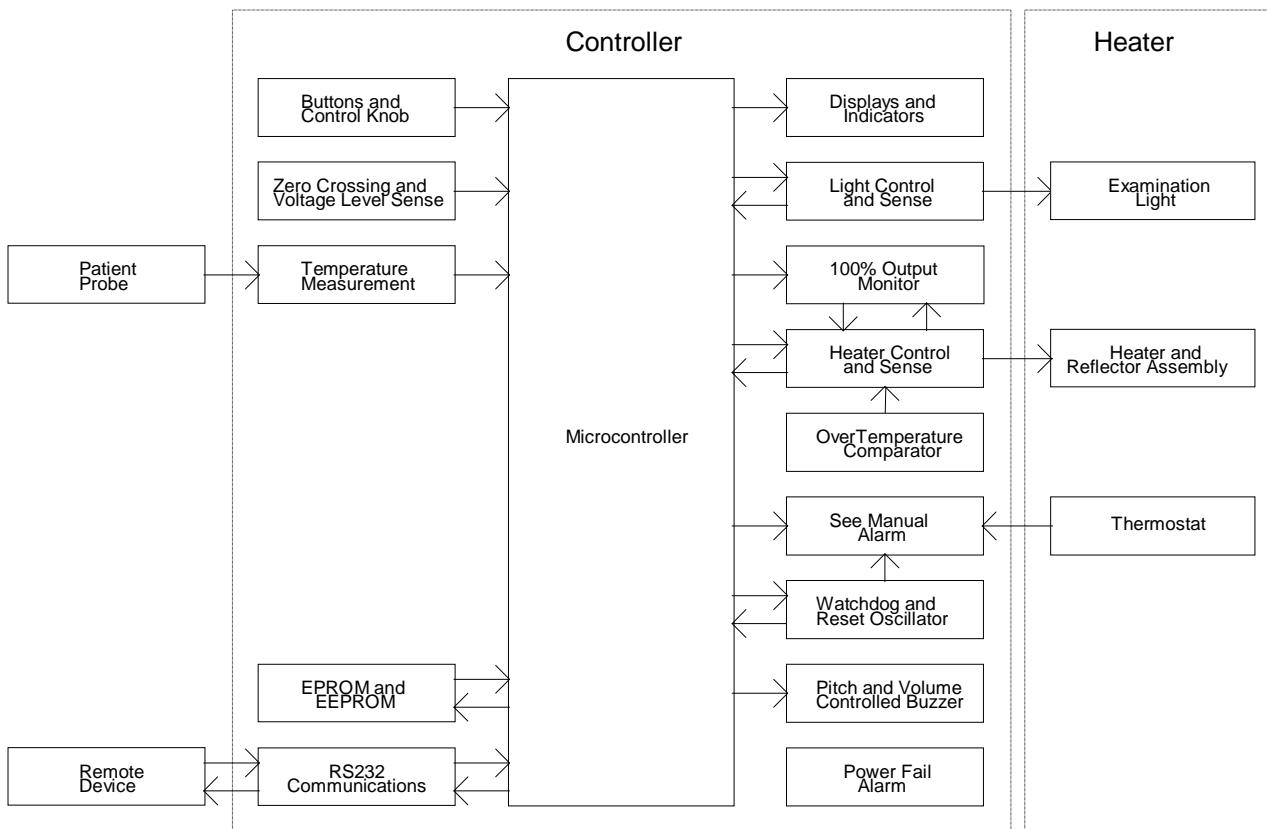
PART 6: IW900 SERIES ELECTRONICS

6.1 TROUBLESHOOTING FLOW CHART



6.2 CIRCUIT OVERVIEW

Figure 6.2 gives an overview of the IW900 series controller electronics. The location of major components and connectors on the PCB's are shown in Section 6.4. Full schematics are given in Section 6.5.



6.2.1 IW900 SERIES CONTROLLER OVERVIEW

The controller electronics are mounted behind the front control panel on two printed circuit boards (PCBs) - the Control PCB and the Power PCB (see section 6.4 for PCB component photos):

POWER PCB

The power PCB provides power supply and I/O lines necessary for sense and control of the examination light and heating element. It holds the mains voltage parts and incorporates a heat sink. The power PCB is connected to the control PCB by a single 14-way ribbon cable (J3). Also connected to the Power PCB are the power transformer (J10 and J9), the heater, light and thermal cut-out harness (J7 and J8), the power switch (J13 and J6) and the mains input terminals (J5).

CONTROL PCB

The control PCB is based around the NXP 80C552 micro-controller. It provides a user interface, temperature measurement and intelligent control of the element power. Almost all of the warmer functions are implemented in software. The control PCB is connected to the Power PCB (J1), the skin sensor socket (J2) and the serial communications port (J12).

6.3 CIRCUIT DESCRIPTION

6.3.1 SOFTWARE INDEPENDENT SAFETY CIRCUITS

Five safety features are included which function independently of the micro-controller. These safety features are provided in addition to the safety features already provided by the micro-controller software.

OVER TEMPERATURE COMPARATOR	A comparator (U12B) is used to disable heat in the element if a skin temperature exceeding 39.5°C is detected (see the Calibration Check Procedure in Section 4.3). Under normal conditions the software will not allow this to happen because a high temperature alarm condition will exist and the power will be reduced to 0%. If a fault prevents the software alarm from occurring then this comparator will stop the micro-controller from applying power to the heater element. The micro-controller will then cause a See Manual alarm with error code 17 because it will sense that it can no longer control the heater.
100% OUTPUT MONITOR	A counter circuit (U13) is used to detect when uncontrolled mains voltage is applied to the heating element. It does this by counting how many continuous mains pulses are supplied to the element. If this count exceeds a threshold value then relays RL2 and RL3 will open thereby disconnecting the element from the mains supply. Under normal conditions the software will not allow this to happen. If this circuit detects continuous full power in the element and opens the relays then the software will detect it is unable to control the element power and will show a See Manual alarm with error code 17.
WATCHDOG & RESET OSCILLATOR	An external hardware watchdog is included which monitors activity of the micro-controller. If the micro-controller is not regularly toggling the watchdog pin, then a See Manual alarm will be started (see Section 2.4) and the micro-controller will be reset. Power to the element will be disabled.
OVERHEAT THERMAL CUT-OUT	Thermal cut-out (rated at 150°C) is fitted in the heater which will cause power to be removed from the element in the event of overheating (within the heater). If this thermal cut-out is tripped then relays RL2 and RL3 will open thereby disconnecting the element from the mains supply and a See Manual alarm will result (see Section 2.4).
POWER FAIL ALARM	The energy stored in the super capacitor C22 provides up to 10 minutes of pulsing alarm in the event that power fails while the unit is switched on. The alarm sounds self-oscillating buzzer PZ2 and flashes the power fail LED.

6.3.2 SOFTWARE CONTROLLED CIRCUITS

The remaining circuit components are used in conjunction with the micro-controller software:

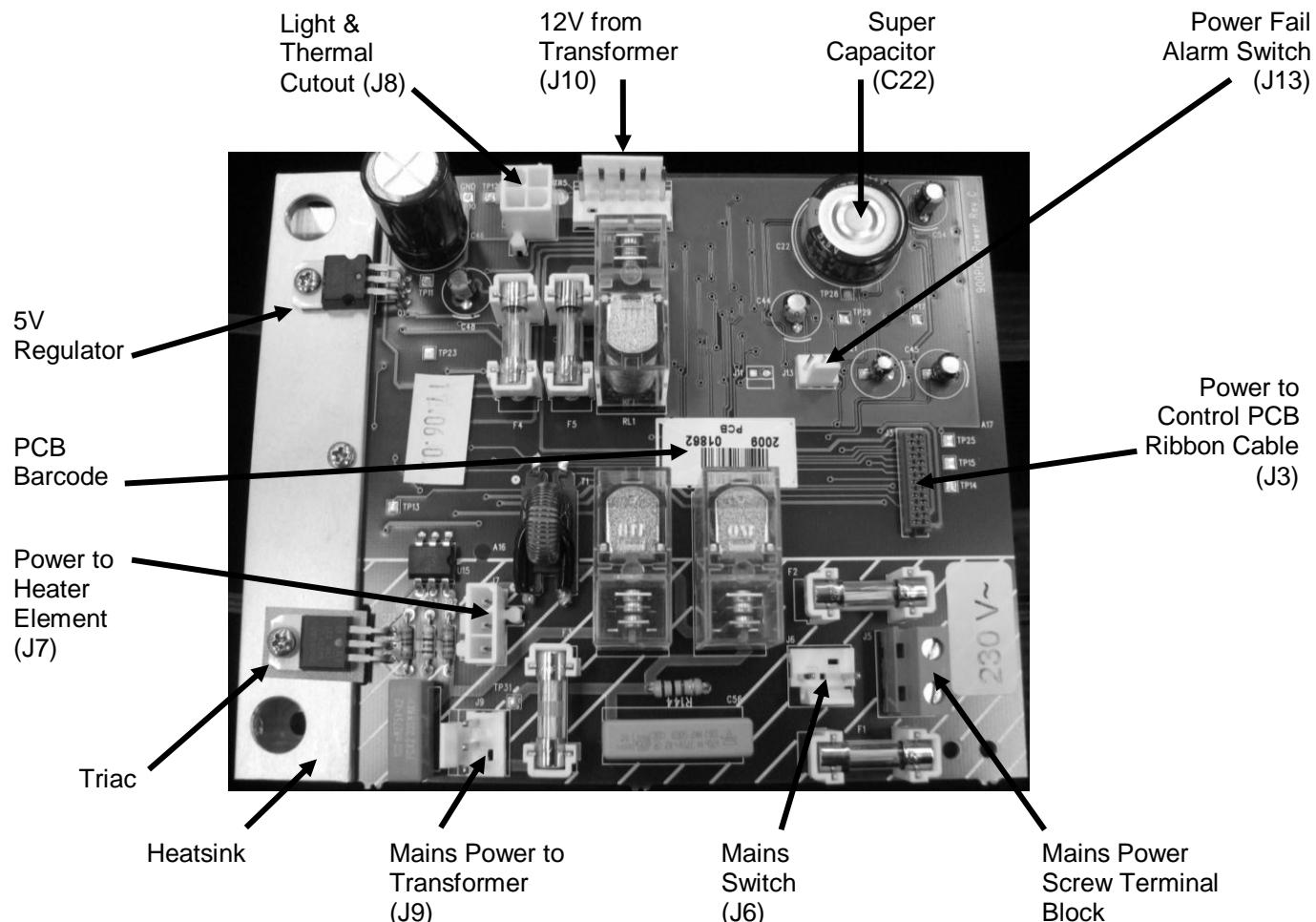
MICRO-CONTROLLER	U4 is a NXP 80C552 which controls most aspects of the warmer.
PROM AND EEPROM	U8 contains the micro-controller software and many non-volatile presets are contained in U7. U7 can only be serviced by the manufacturer because it contains factory preset information.
RS232 COMMUNICATIONS	U6 provides an RS232 interface with the micro-controller. This is used for manufacturing purposes only.
BUTTONS & CONTROL KNOB	All user input is via the buttons or the control knob. The encoder SW11 has a two-wire quadrature output that allows the micro-controller to sense movement and direction. U2 and U3 multiplex the buttons into a single line that is used as an input by the micro-controller.
DISPLAYS & INDICATORS	U1 drives the displays and indicators which are configured in four banks. A single line from U1 is used as feedback to the micro-controller (test point TP9).
LIGHT CONTROL & SENSE	Relay RL1 controls the examination light and U16 provides feedback on the state of the light to the micro-controller.
HEATER CONTROL & SENSE	Triac Q22 controls the power to the element. It is opto-isolated with U15. Relays RL2 and RL3 allow the 100% MONITOR circuit and the WATCHDOG circuit to remove power from the element if a fault is detected. Current pulses in the element are sensed via coil T1 (test point TP15).
PITCH & VOLUME CONTROL BUZZER	U19 provides pitch and volume control over buzzer PZ1 which plays all alarm and acknowledge sounds.
ZERO CROSSING & LINE LEVEL SENSE	The mains voltage is monitored by a secondary winding from the power transformer. Comparator U14E detects zero crossings and a waveform is derived (found at test point TP14) which exhibits a momentary negative going pulse on each zero crossing. A DC voltage proportional to line voltage level is detectable at TP8.

6.4 PCB COMPONENT LOCATIONS

The photographs below identify some of the major components used on the IW900 series of Infant Radiant Warmers and where they are located.

6.4.1 POWER PCB

NOTE: These are voltage specific with the voltage identified by a label on the mains isolating relay.



The spare parts numbers for the Power PCBs are listed below:

- 043041004 PCB Assy Power IW900 120V
- 043041003 PCB Assy Power IW900 230V
- 311040682 SuperCap 1F 5.5V HT
- 999830009 Fuse 2A 250V fast blow 20x5mm
(F3 and F4 for all models)
- 348060023 Fuse 8A 250V fast blow 20x5mm
F5 for all models, F1 and F2 for 120V models)
- 348060022 Fuse 4A 250V fast blow 20x5mm
(F1 and F2 for 230V models)

NOTE: 20x5mm fast blow fuses are available from standard electrical suppliers. The correct replacement fuses are listed on the label inside the front panel.

6.4.2 CONTROL PCB

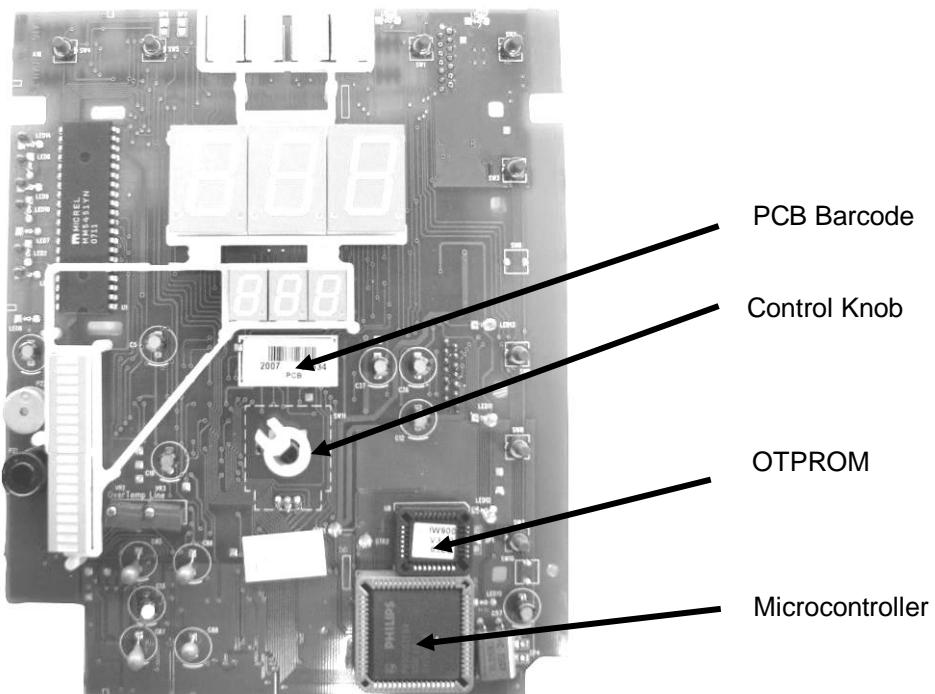
There are two different control PCBs depending on whether you have a Servo (Baby) controlled warmer or a Manual warmer. The spare part numbers for ordering new Control PCBs are:

For IW910, IW93x and IW980 Servo Controlled Warmers order;

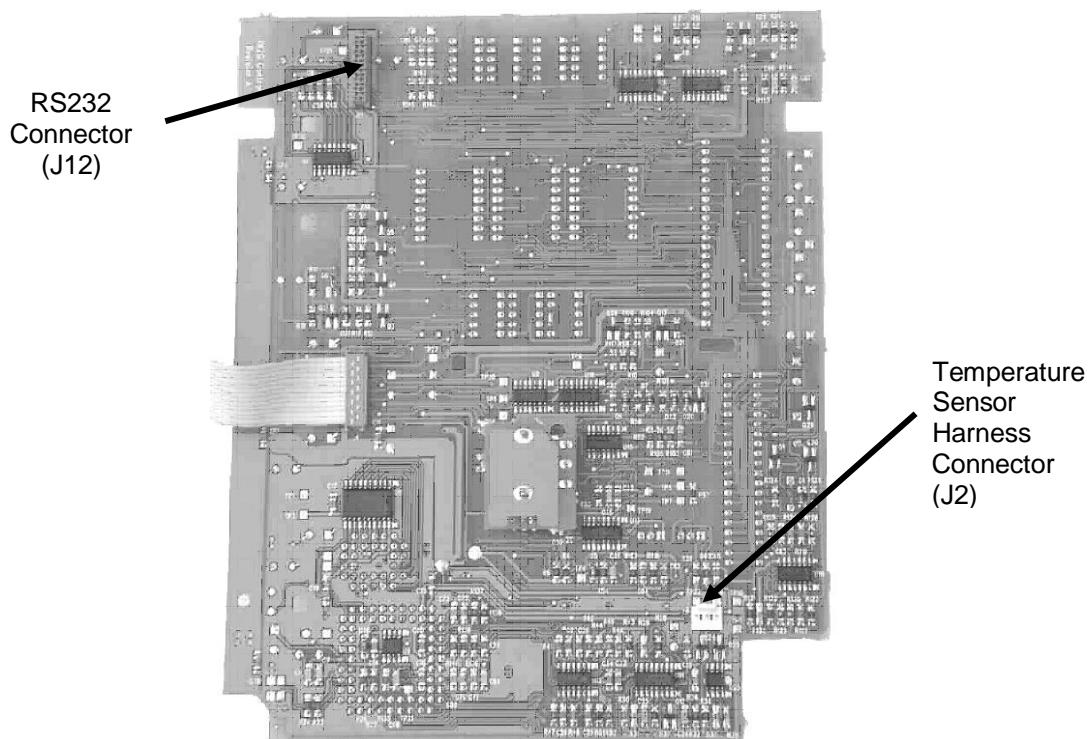
043041041 PCB Assy Control IW900 Servo

For IW920, IW95x and IW990 Manual Controlled Warmers order;

043041002 PCB Assy Control IW900 Manual



Front View of IW900 Series Control PCB Board

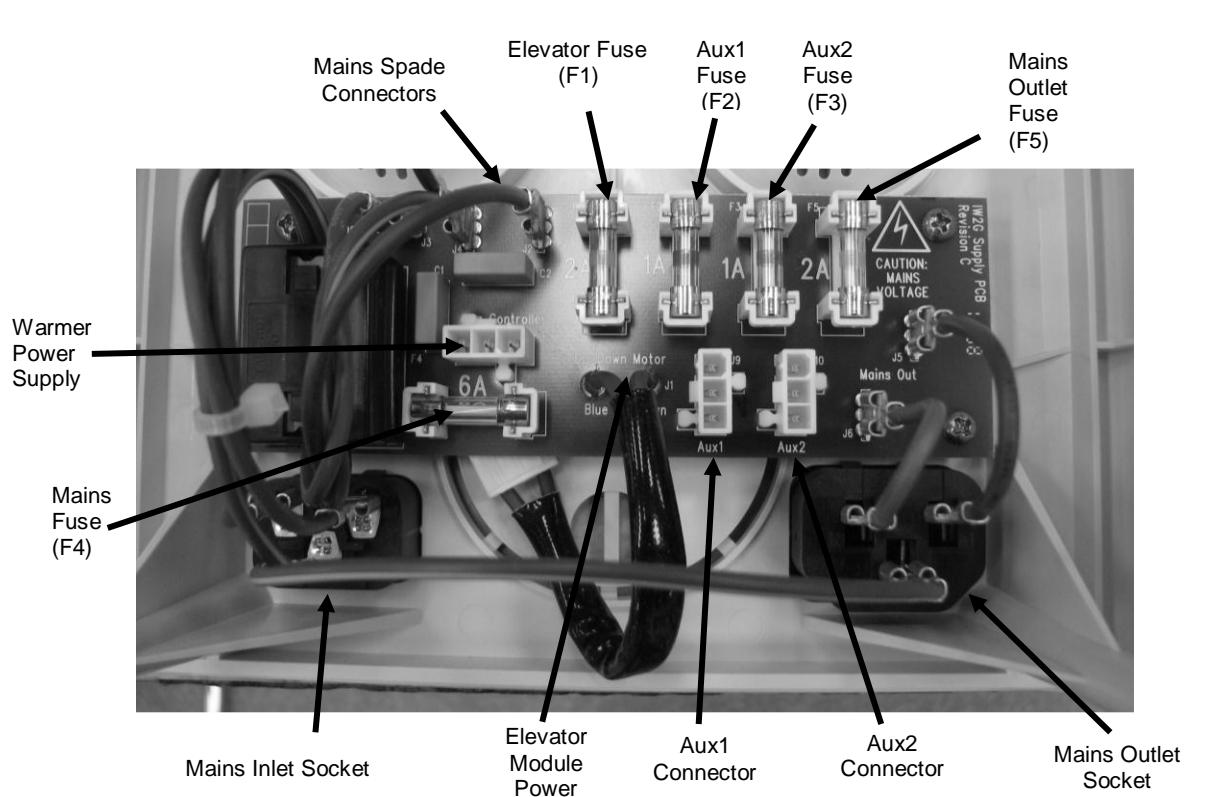


Rear View of IW900 Series Control PCB Board

6.4.3 POWER SUPPLY PCB

This PCB is only used on IW93x and IW95x warmers and is located in the lowest module of the column. It is not voltage specific.

Pre-September 2012:



Post-September 2012: Mains Outlet Socket and harness have been removed.



The spare parts numbers for the power supply PCB are listed below:

043041137 PCB Power Supply CosyCot™ Spare

999830001 Fuse 1A 250V fast blow 20x5mm (F2 and F3)

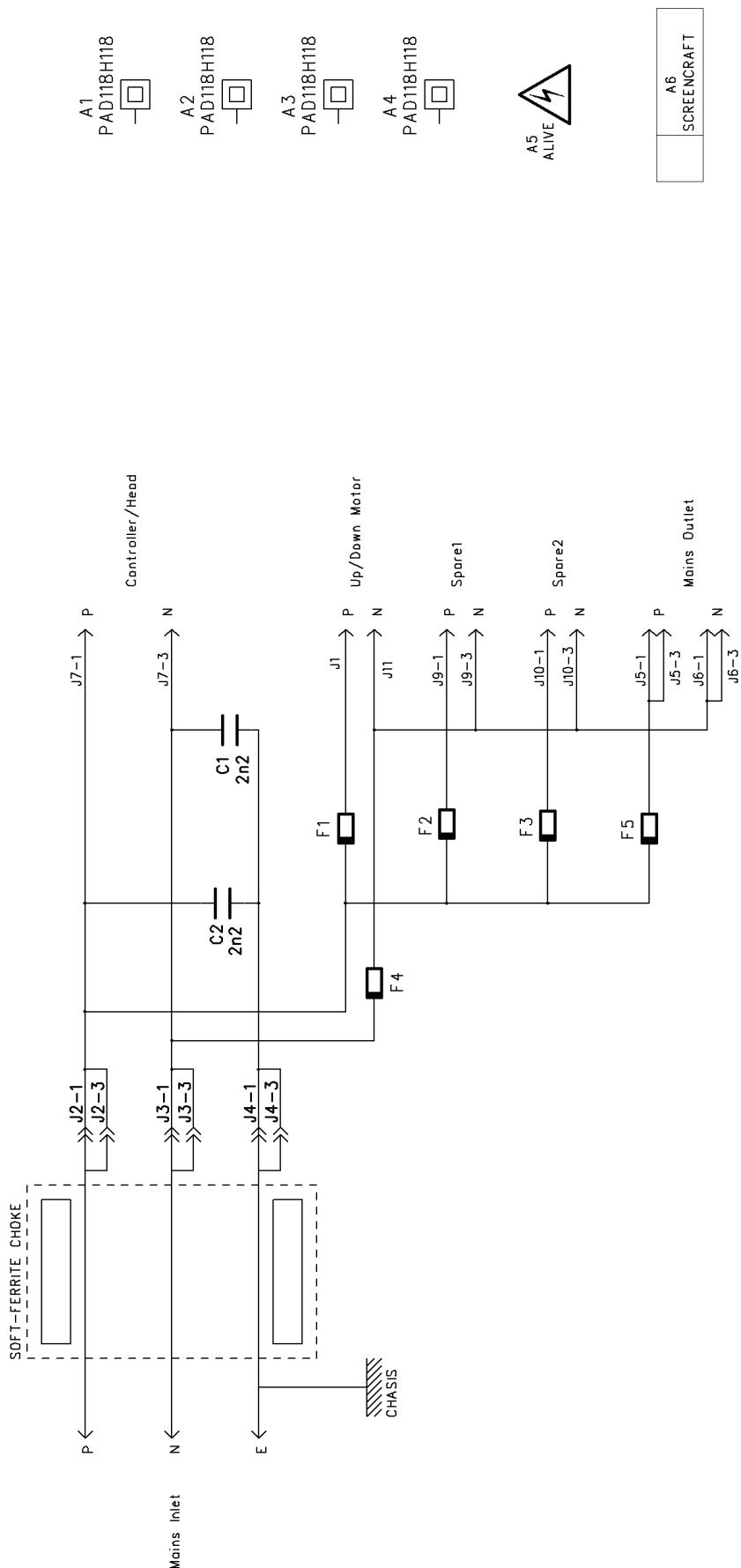
999830009 Fuse 2A 250V fast blow 20x5mm (F1 and F5)

348060027 Fuse 6A 250V fast blow 20x5mm (F4)

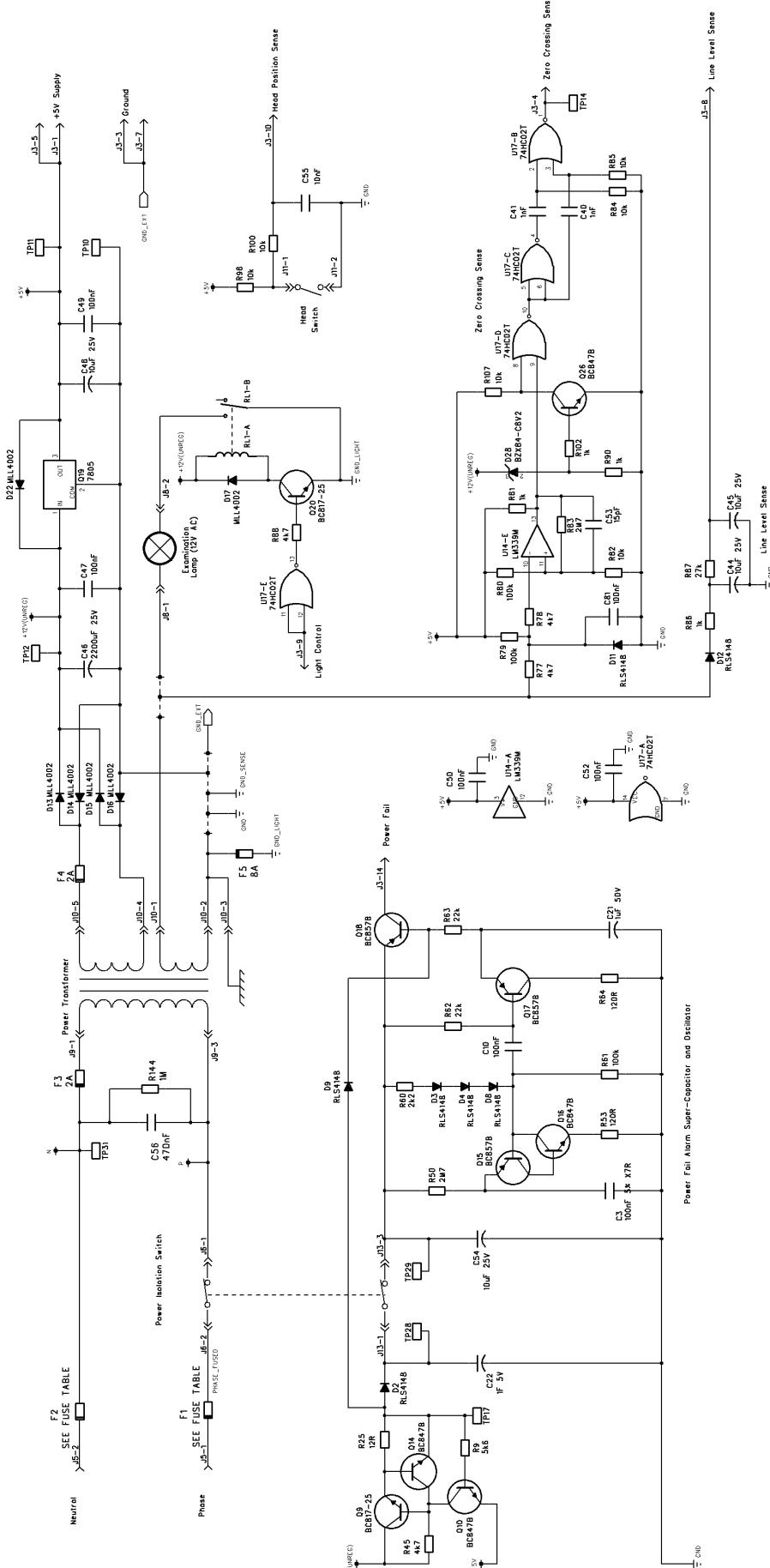
NOTE: 20x5mm fast blow fuses are available from standard electrical suppliers. The correct replacement fuses are listed on the label inside the front panel.

6.5 CIRCUIT SCHEMATICS

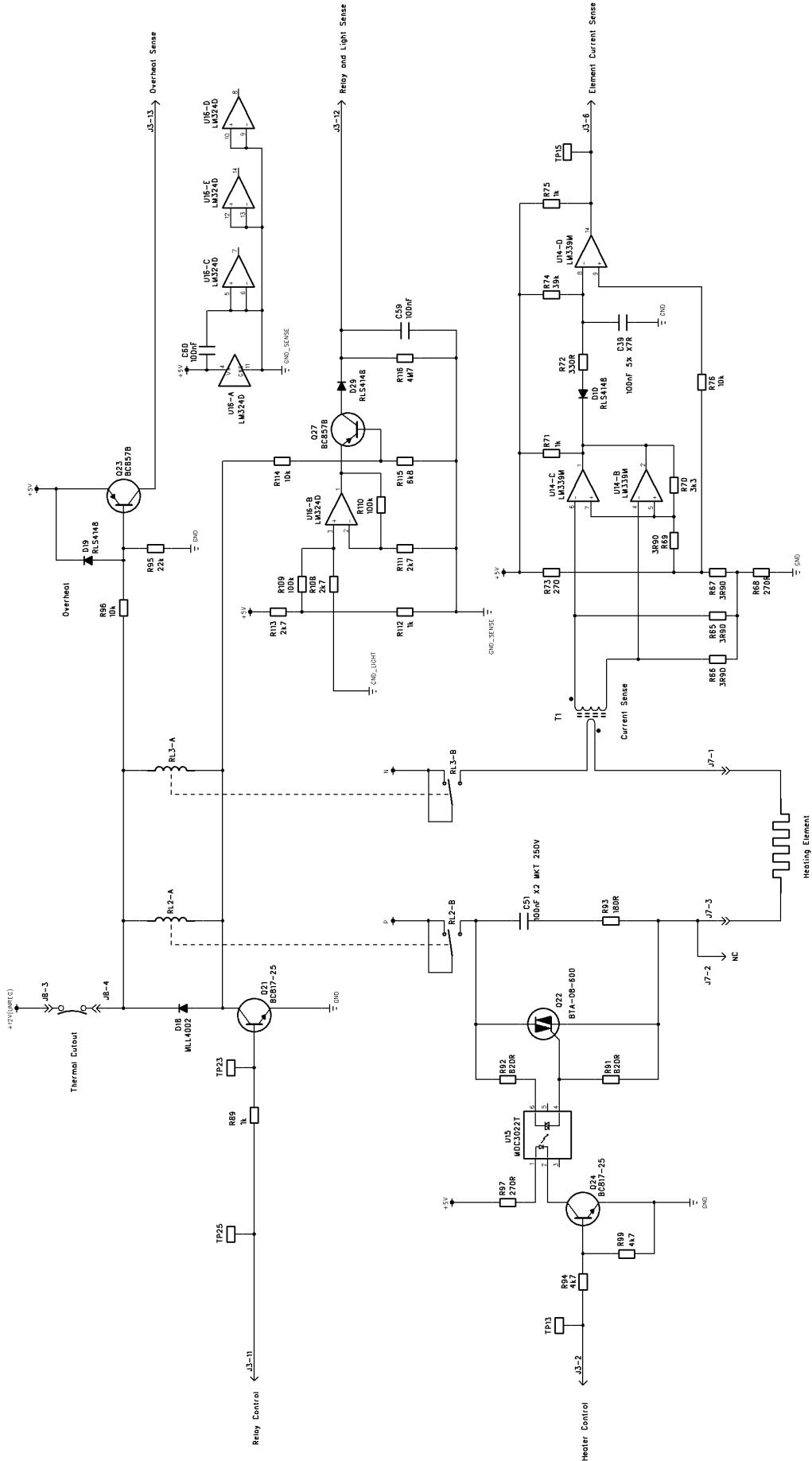
6.5.1 347040384 IW900 COSYCOT™ MAINS SUPPLY PCB REV B SCHEMATIC



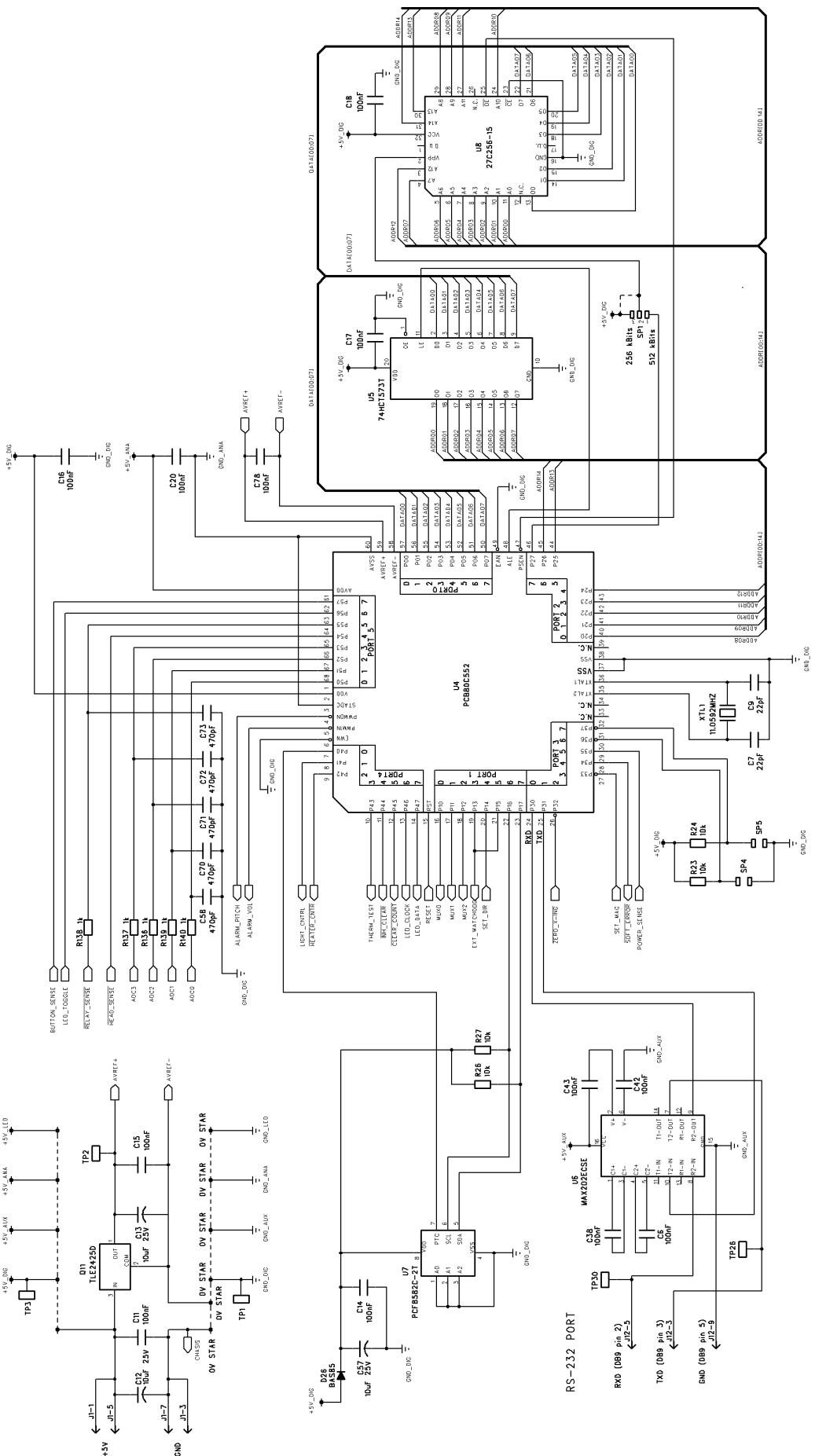
6.5.2 347040374 IW2G POWER PCB REV C (SHEET 1 OF 2)



6.5.3 347040374 IW2G POWER PCB REV C (SHEET 2 OF 2)



6.5.4 347040374 IW2G CONTROL PCB REV C (SHEET 1 OF 4)



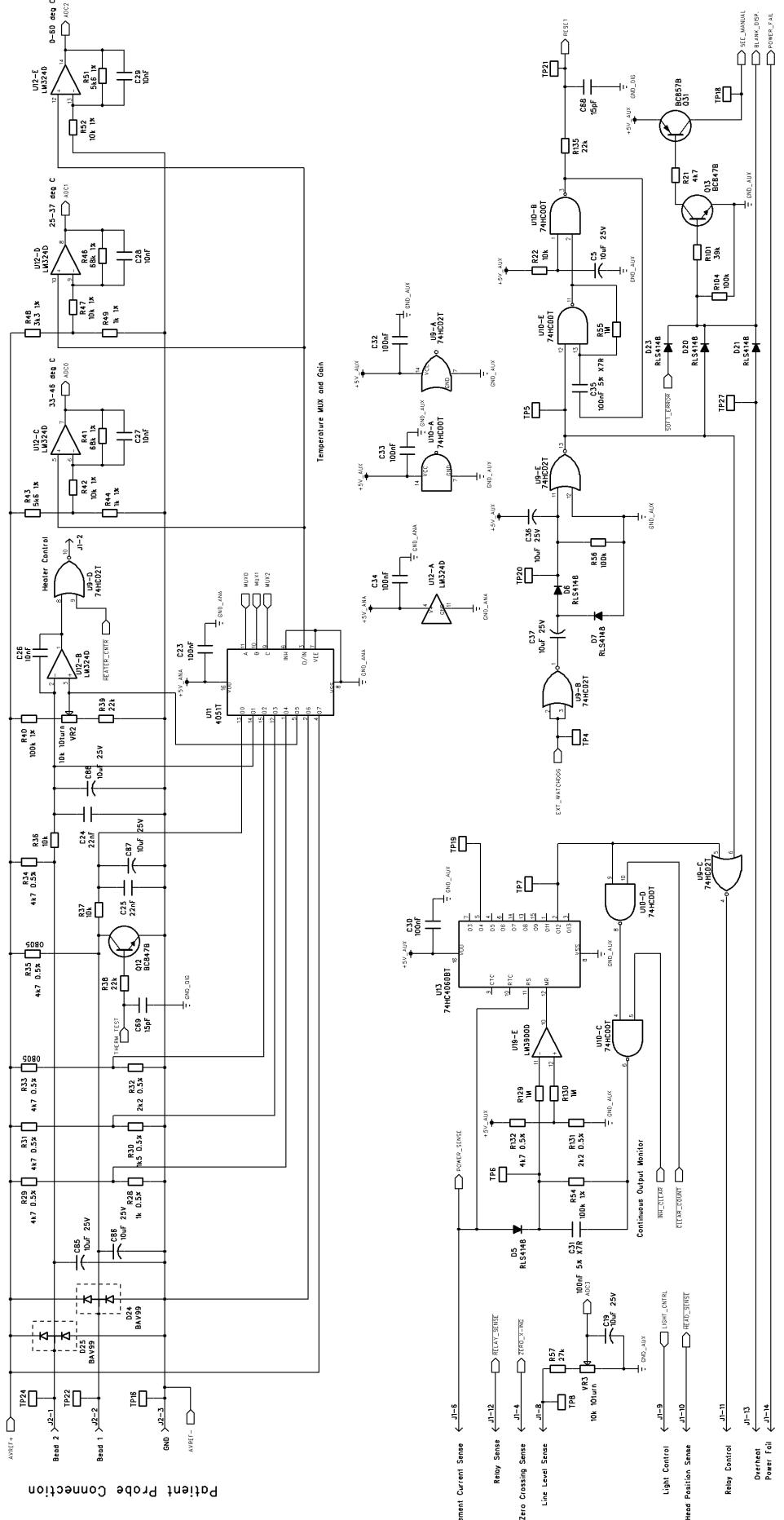
Fisher & Paykel
HEALTHCARE

IW900 Series Service Manual

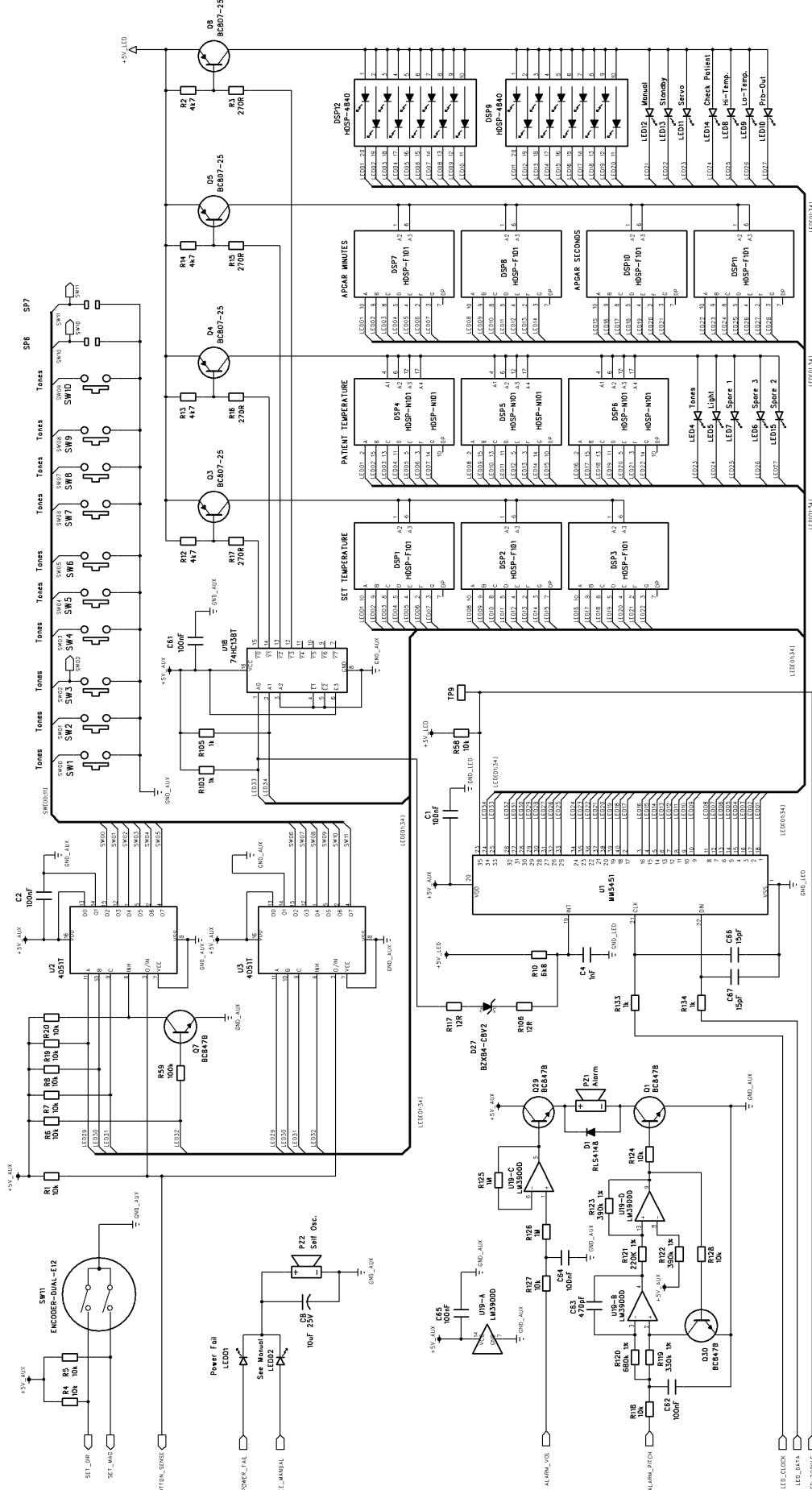
Manufactured From June 2008

PART NUMBER	:	185045312
ISSUE DATE	:	AUGUST 2013
ISSUE NUMBER	:	C
PAGE	:	50

6.5.5 347040374 IW2G CONTROL PCB REV C (SHEET 2 OF 4)



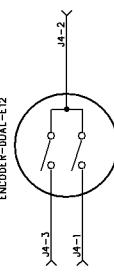
6.5.6 347040374 IW2G CONTROL PCB REV C (SHEET 3 OF 4)



**MISCELLANEOUS PARTS FOUND ON THE PCB
THAT HAVE NO ELECTRICAL FUNCTION**

Additional small PCB to adapt for alternative encoder

ENCODER-DUAL-E12



Screencraft symbol and UL logo



- A6 PAD9BH125D
- PAD 98 THOU DIA. THOU HOLE (pin locating hole 1/8")
- A2 PAD 98 THOU DIA. THOU HOLE (pin locating hole 1/8")
- PAD 98 THOU DIA. THOU HOLE (pin locating hole 1/8")

Star Point Cover Pads

- A10 PAD138H51
- A11 PAD138H51
- A12 PAD138H51
- A13 PAD138H51

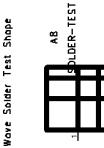
Heat Sink Mounting Hole

- A9 PAD138H91

ScreenCraft Router Location Holes

- A16 PAD9BH125D
- A17 PAD 98 THOU DIA. THOU HOLE (pin locating hole 1/8")
- A18 PAD 98 THOU DIA. THOU HOLE (pin locating hole 1/8")
- A19 PAD 98 THOU DIA. THOU HOLE (pin locating hole 1/8")

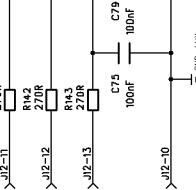
Wave Solder Test Shape



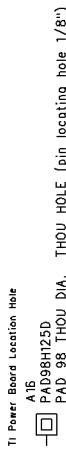
Mains Cable Restraint Holes

- A14 PAD9BH125D
- A15 PAD9BH125D

Unused filters for remote buttons



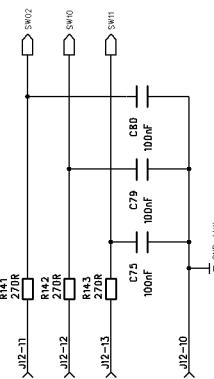
TI Power Board Location Hole



Mains Fuse Current Ratings for Different Voltage Variants

Fuse	Current Rating (A)	Part Number
100V	8	348060023
120V	8	348060023
230V	4	348060022

Mains live symbol



Intentionally Blank

PART 7: HEAD AND COLUMN

7.1 HEAD ASSEMBLY

Head Manufacture Date

The year of manufacture of the head can be found underneath the head label (3) on the very top of the head. This manufacture date applies to the head only and should not be used when referring to the warmer as a whole unit.

Head Nut Removal Spanner

A bent wire tool (171042012) is available for the removal of the head nut (648040142).

Swivel Head

A swivel head is available for the French market only. The product numbers IW910AFS and IW920AFS denote the servo control and manual control mobile warmers respectively.

7.1.1 HEAD ASSEMBLY PARTS LIST

<i>Item</i>	<i>Part Number</i>	<i>Description</i>
1	616050011*	Screw #8 x 1" csk Phillip's S/S (Recommended torque 1.2Nm)
2	693040689	Cap support arm
3	183041826*	Label head
4	693040666*	Case upper head moulded
5	183041827*	Label warning case internal
6	614040153*	Screw #8 x 1" panpozi
7	331040167*	Baffle insulation upper case
8	095428265	Harness upper head
9	693041424	Support arm
10	334060011	Sleeving heat shrink 1/4" Viton
11	342042009	Receptacle lamp halogen
12	648040135	Reflector
13	349040128	Thermostat
14	622040508	Washer M5 5.3x12.5 O/D
15	614040153	Screw #8 x 1" panpozi
16	331040164	Insulator element reflector
17	693041858	Light box
18	648040144	Element 120V 450W
	648040134	Element 230V 450W
19	424040069	Halogen lamp 20W
20	195900044*	Silicon tape 363 single sided 1"
21	693040665*	Case lower head moulded
22	433040012*	Diffuser glass light
23	614042011	Screw M4 x 10 SS CSK Philips
24	648040140	Grille
25	642042050*	Bracket Head Rear IW2G
26	614040132	Screw 3x8plas W/Hd Plps2yelchr
27	697042005	Lock Nut Swivel Head Patient Warmer
28	622040150	Washer Arm
29	697042006	Swivel Head Stationary Patient Warmer
30	622040151	Washer Pivot
31	697042007	Swivel Head Rotate Patient Warmer
32	614040864	Screw M5x30 Allen Cap SS

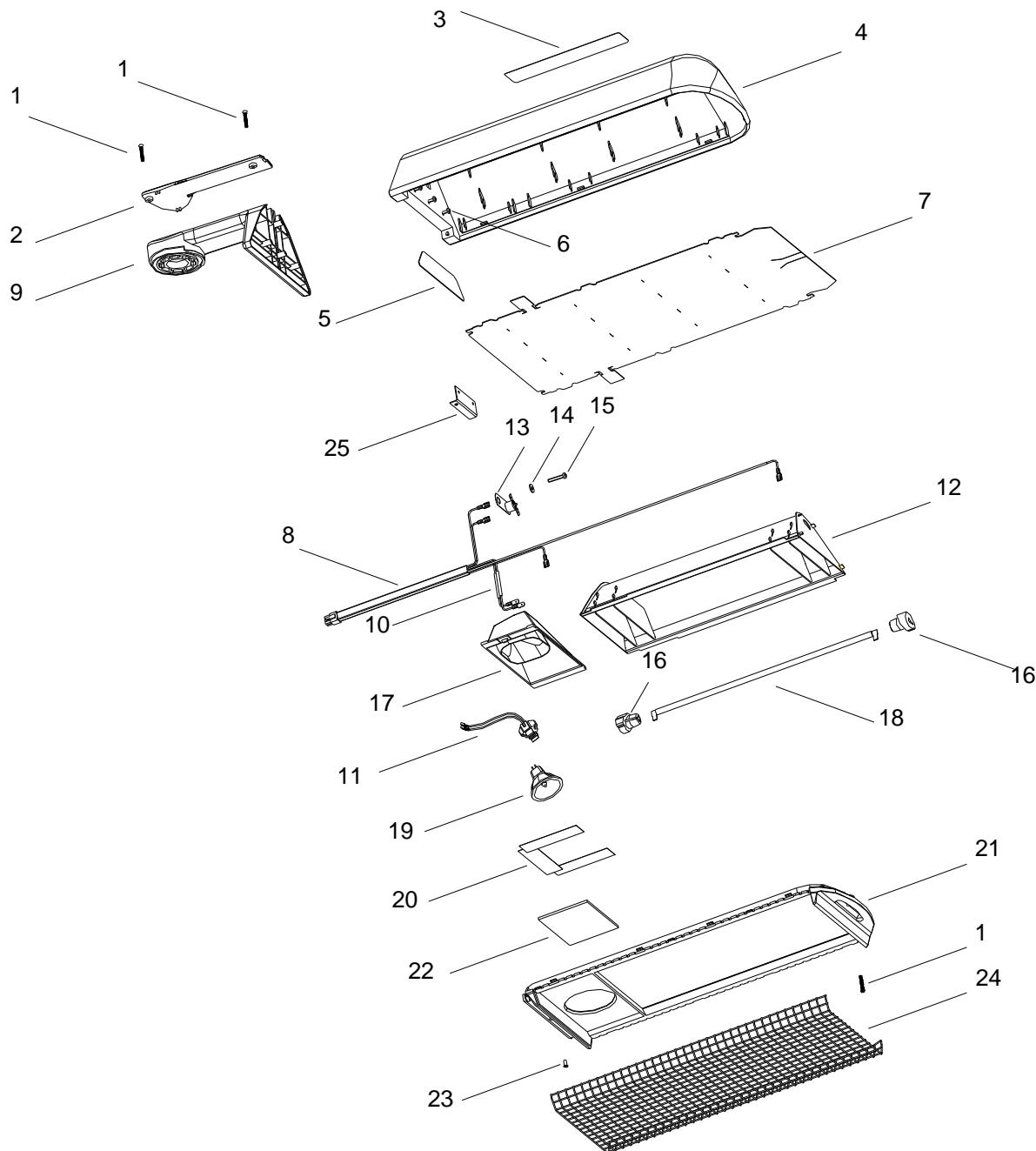
NOTE: Complete heater assembly available as Part No. 043041129 - 230V
043041130 - 120V

* These parts available as a kit of plastic mouldings – 043042359 Kit Head Replacement

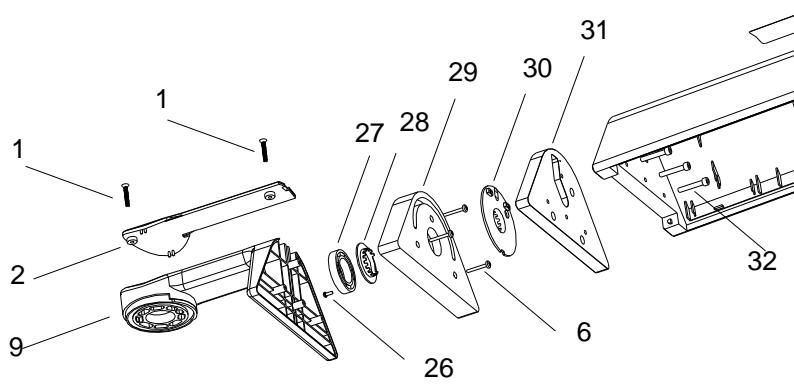
NOTE: If the reflector (12) is replaced it is important to ensure that it is correctly aligned inside the upper case (4). The flats along each side of the reflector have steps cut out from either end to assist assembly. The reflector is placed in the plastic head moulding such that aluminium flat is positioned under each of the four (two per side) plastic tabs in the upper case. The reflector should sit evenly in the head under the four front plastic tabs and Nomex.

NOTE: The IW910AFS and IW920AFS contains extra parts shown inside the box on the next page, part #15 is replaced by #32 for these models.

7.1.2 HEAD ASSEMBLY DIAGRAM



IW910AFS & IW920AFS ONLY



7.2 IW900 CONTROLLER ASSEMBLY

7.2.1 IW900 CONTROLLER ASSEMBLY PARTS LIST

Item	Part Number	Description
1	648040142	Pivot securing nut
2	622040150	Washer arm
3	622040151	Washer pivot
4	693040706	Plug set (5 pieces)
5	614040309	Screw M8 x 20 cap low profile
6	693041423	Column cap top
7	095428283	Harness RS232
8	095428266	Harness lower head
9	616050011	Screw #8 x 1" csk Phillip's S/S (Recommended torque 1.2Nm)
10	641040815	Extrusion column short
11	043040925	Transformer for 120V models
	043040902	Transformer for 230V models
12	043041004	PCB Power for 120V models
	043041003	PCB Power for 230V models
13	614040117	Screw M4 x 8 Taptite
14	043041041	PCB Control for IW910, IW93x & IW980 (Servo Control models)
	043041002	PCB Control for IW920, IW95x & IW990 (Manual Control models)
15	095542098*	Harness probe
16	341040369*	Probe socket, nut and washer
17	043042035	Control panel for IW910, IW93x & IW980 (Servo Control models)
	043042036	Control panel for IW920, IW95x & IW990 (Manual Control models)
18	233201629	Panel fascia warmer servo blue
	233201630	Panel fascia warmer manual blue
	233201634	Panel fascia warmer servo blue symbols
	233201635	Panel fascia warmer manual blue symbols
19	693040736	Cap probe socket
20	693040677	Control knob plastic
21	349040134	Rocker switch DPDT 10A
22	095428270	Harness mains switch
23	Label fuse for 120V models (specify model number)
	Label fuse for 230V models (specify model number)
24	693040271	Knob spacer
25	341040543	Clip adhesive ribbon cable
26	388042033*	Ferrite Core, Probe-harness
27	388042032	Ferrite Core, Lower Head Harness

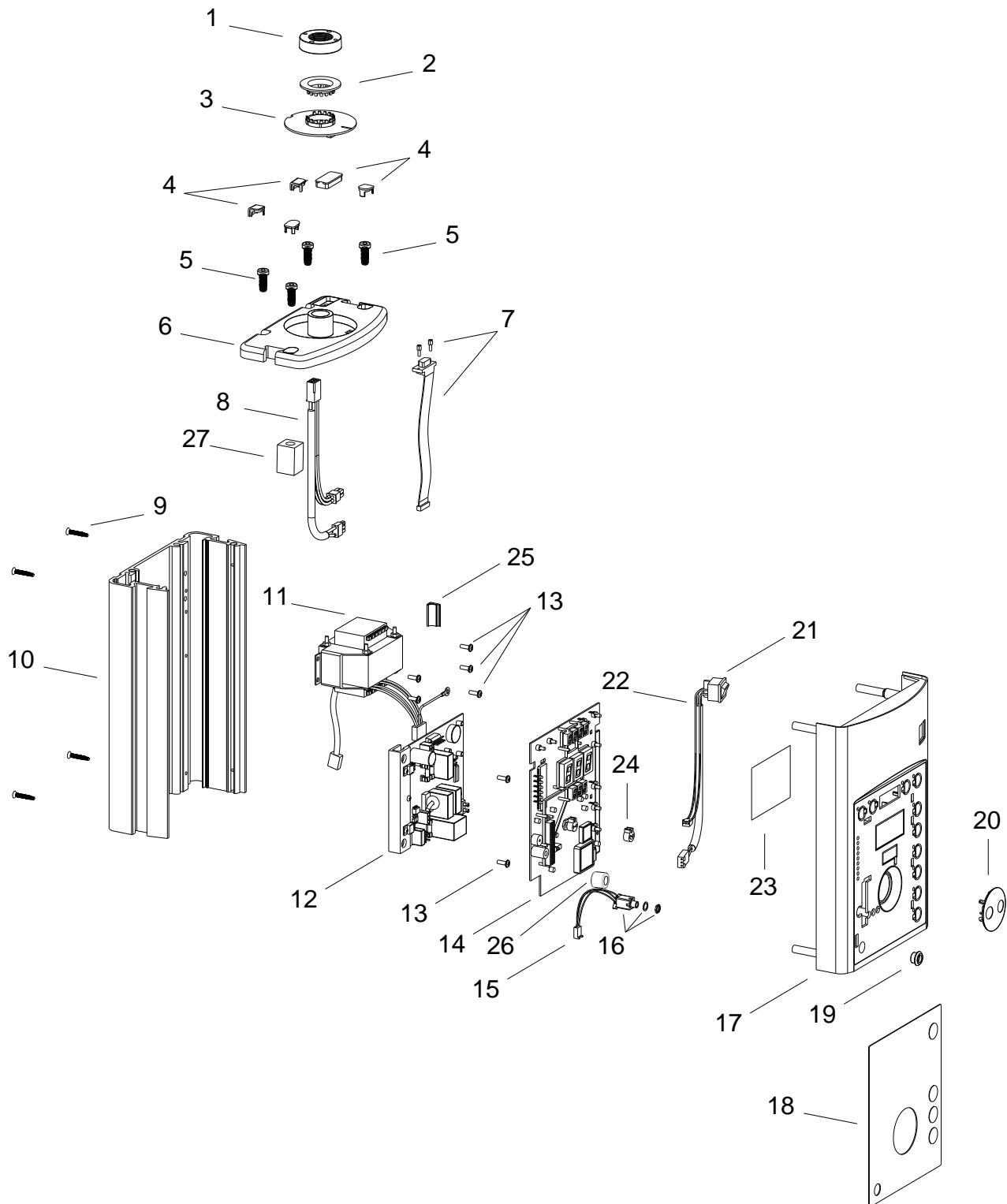
Replacement Fuses for Power PCB

999830009	Fuse 2A 250V fast blow 20x5mm (F3 and F4 for all models)
348060023	Fuse 8A 250V fast blow 20x5mm (F5 for all models, F1 and F2 for 120V models)
348060022	Fuse 4A 250V fast blow 20x5mm (F1 and F2 for 230V models)

NOTE: 20x5mm fast blow fuses are available from standard electrical suppliers. The correct replacement fuses are listed on the label inside the front panel (see part 23).

* These parts are available as a complete cable harness assembly – 043042611 Probe Socket/Loom Assy - Spare

7.2.2 IW900 CONTROLLER ASSEMBLY DIAGRAM



7.3 POWER CORDS

All power cords have a female IEC plug and the appropriate connection for:

Spare Part Number Country

043042073	Asia Pacific Region and China
043042029	Europe
043042028	United Kingdom
043042023	USA
043042074	No Plug Fitted

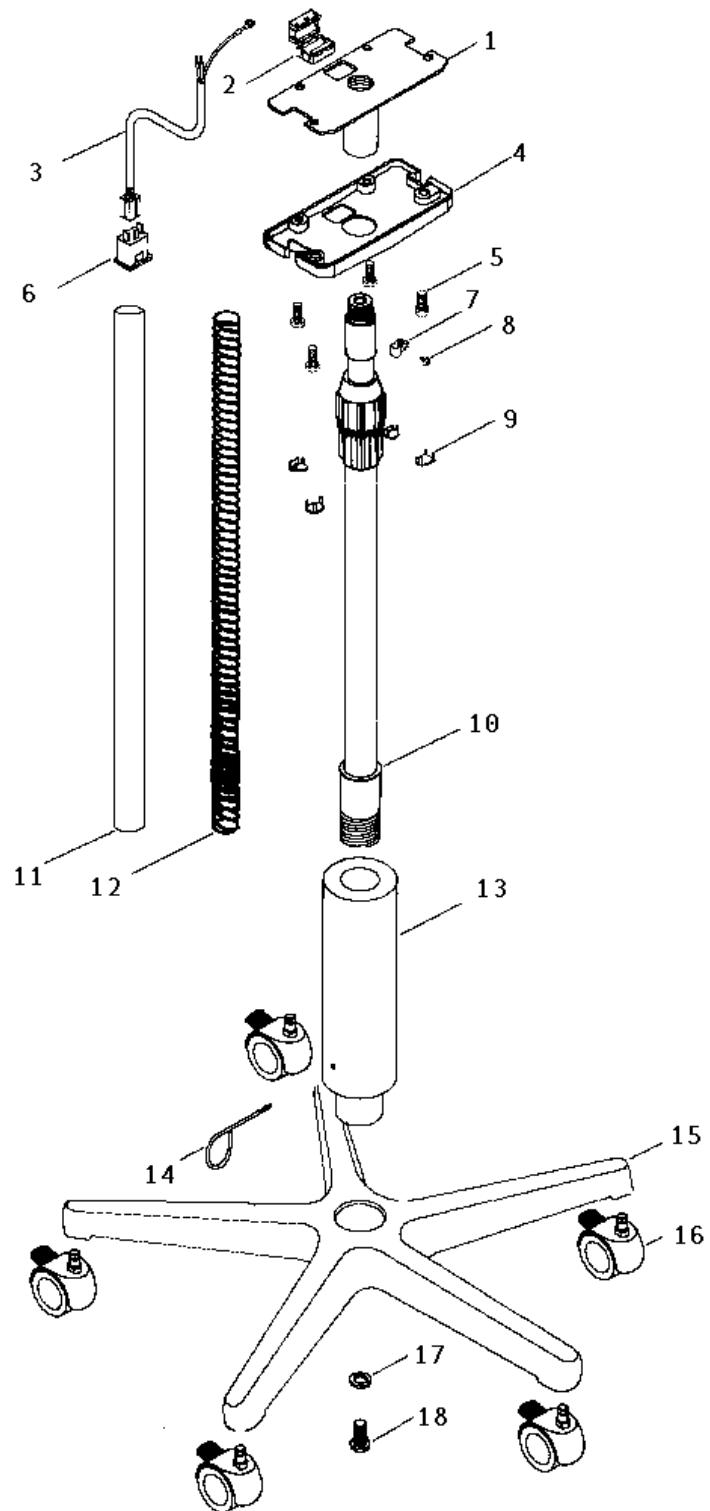
7.4 IW910/920 MOBILE COLUMN ASSEMBLY

7.4.1 MOBILE COLUMN ASSEMBLY PARTS LIST

<i>Item</i>	<i>Part Number</i>	<i>Description</i>
1	641040763	Bracket support
2	389045063	Ferrite core EMI clamp
3	095428299	Harness mains inlet
4	043042399	Cap plastic column lower - mobile
5	614040309	Screw M8 x 20 cap low profile
6	341050216	Socket power inlet snap mobile
7	647040117	Cable grip p-type
8	614040117	Screw M4x8 Taptite
9	693040706	Plug set (5 pieces)
10	043040978	Pole extendible assembly
11	187040191	Polysleeve 41 mm x 100 cm
12	662040056	Spring mobile warmer pole
13	655040082	Stabiliser weight base mobile
14	651040172	Hook cable
15	693041480	Base mobile finished
16	665040014	Castor locking 50 mm
17	622040624	Washer M12 spring
18	614040614	Screw M12x25 Allen S/S button

NOTE: Item 15 and 16 available as a spares kit. Part Number 043041125

7.4.2 MOBILE COLUMN ASSEMBLY DIAGRAM



7.5 IW93X/95X COSYCOT™ COLUMN ASSEMBLY

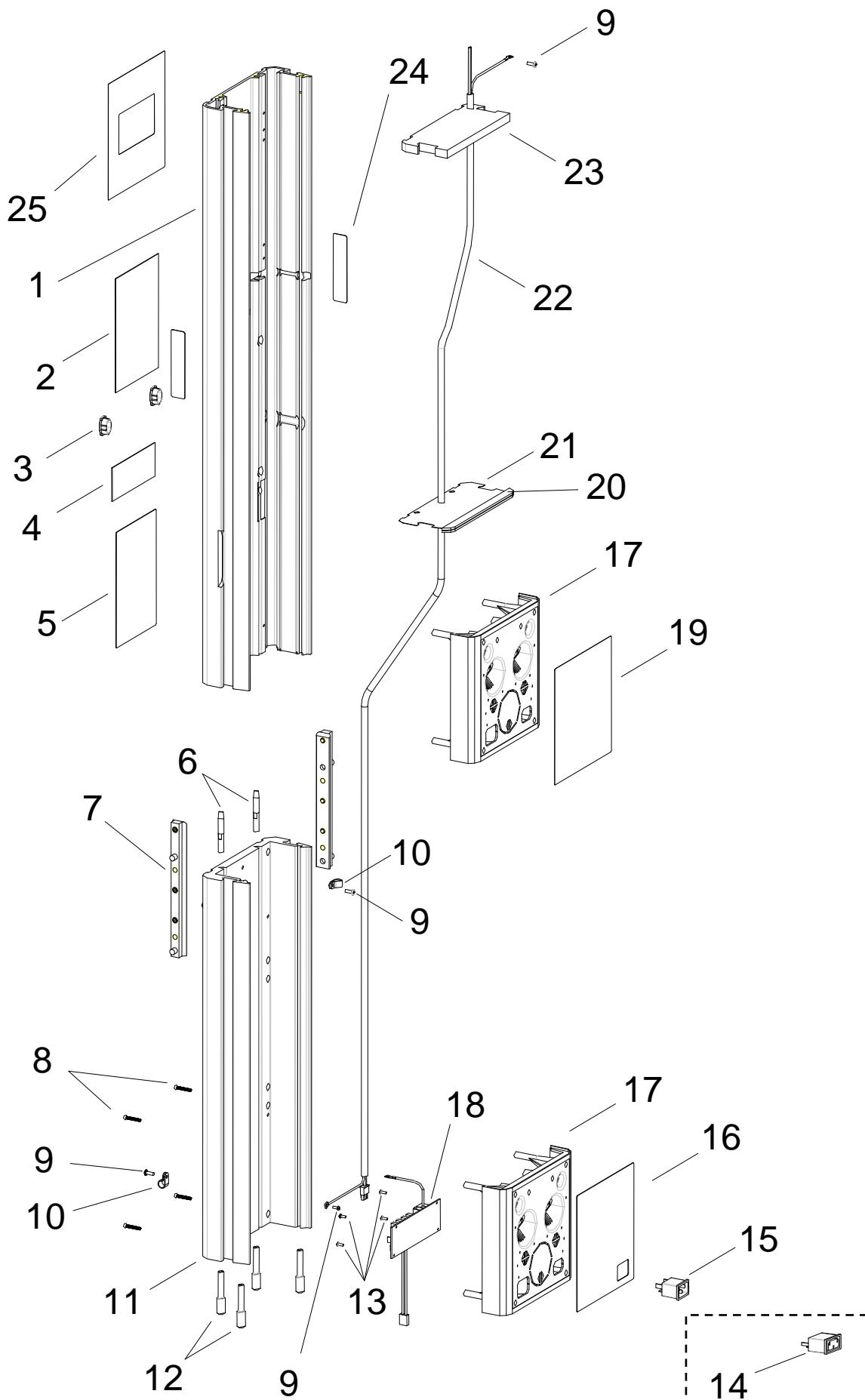
7.5.1 COSYCOT™ COLUMN ASSEMBLY PARTS LIST

Item	Part Number	Description
1	642042097	Extrusion Column Upper Finished
2	183042176	Label Cosycot Max Weight 140kg
3	693041492	Cap Column Oxygen II
4	183041960	Label Cover Gas Holes
5	693040746	Cover Label Panel Clear
6	628040048	Pin locator split column
7	043042998	Bassinet Frame Mounting Kit
8	616050011	Screw 8 x 1" CSK Phil (Recommended torque 1.2Nm)
9	614040117	Screw M4 x 8 Pan Phillips
10	647040117	Cable grip - P type
11	641040737	Extrusion column lower
12	614040859	Stud M8 x 40
13	614040132	Screw 3 x 8 plas w/hd
14	341050215	Socket power outlet snap 3 pt [Removed July 2012]
15	341050214	Socket power inlet snap 3 pt
16	233201632	Panel fascia power 230V
	233201633	Panel fascia power 120V
	233201637	Fascia Power 230 V Blue without AUX
	233201638	Fascia Power 120 V Blue without AUX
17	693040709	Panel accessories
18	043041137	PCB power supply CosyCot™ spare
19	233201451	Panel Fascia Blank IW2G
20	693040735	Gasket foam IW2G
21	336060118	Gasket Column Oxygen Lower
22	095542034	Harness Column One-Piece
23	331042014	Gasket Column Oxygen Foam
24	183041953	Label Weight vs. Height Warning Symbol
25	233201631	Fascia Panel Rear

NOTE: For Germany, item 1 is replaced by 642042024 which contains holes to accept DIN gas fittings.

NOTE: Items 17 and 19 are available assembled as Part No. 043041085.

7.5.2 COSYCOT™ COLUMN ASSEMBLY DIAGRAM



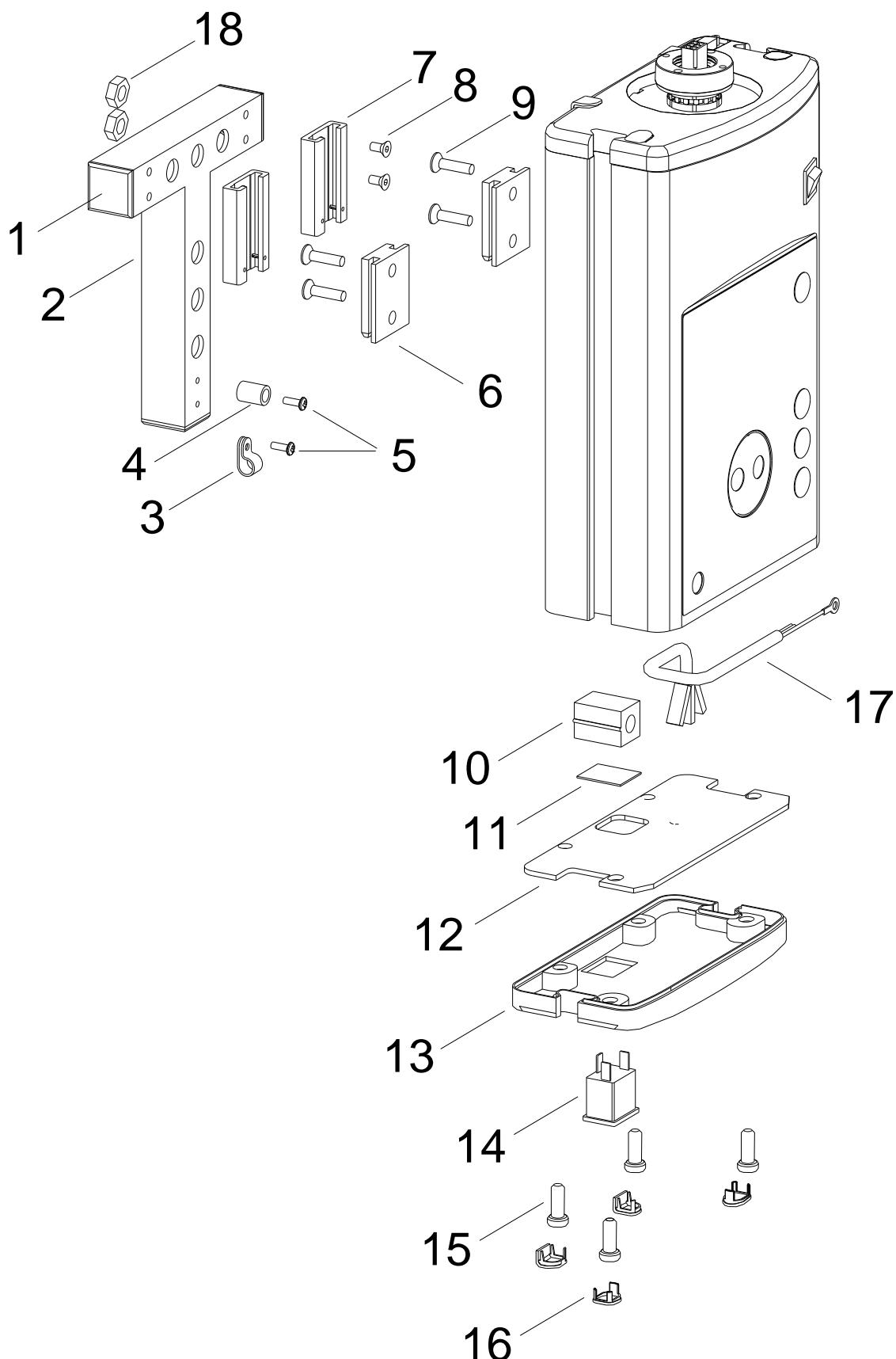
7.6 IW980/990 WALL MOUNT COLUMN ASSEMBLY

7.6.1 IW980/990 WALLMOUNT COLUMN ASSEMBLY PARTS LIST

NOTE: The below parts list only specifies those components unique to the IW980/990 Wall Mount CosyCots™. For additional parts information refer to section 7.2.2.

Item	Part Number	Description
1	693041448	*
2	641040821	*
3	647040127	*
4	693041443	*
5	614040117	*
6	693040491	Spacer Bracket to Column IW980/990
7	614040717	*
8	614042337	*
9	614040208	Screw M4 x 8 Pan Phillips
10	389045063	Bracket Mounting 30mm x 5mm Tongue
11	195680013	Bracket 30mm C-Slot
12	641040822	Screw M5 X 12 Csk Allen Blk
13	043042398	Screw M6 x 25 CSK Allen
14	341050216	Ferrite Core EMI Clamp
15	614040309	Tape Foam Double Sided
16	693040706	Bracket Support Wallmount Steel
17	095428299	Cap Plastic Column Lower - Wall
18	621040935	Socket Power Inlet
		Screw M8 x 20 cap low profile
		Plug set (contains complete set of five plugs)
		Harness Mains Inlet Mobile IW2G
		Nut M5 Full Hex Zn/St

* These items available assembled as a kit - 043041135 Wall Mounting Bracket Assembly.



PART 8: IW93X/95X COSYCOT™ BASSINET

8.1 BASSINET ASSEMBLY (IW93X & IW95X)

This bassinet has lift and fold side panels and an adjustable transport handle.

Spare Part Numbers:

043042631	Bassinet V3.1 Std Spare
043042632	Bassinet V3.1 Long Spare

NOTE: These spare part numbers refer to complete assemblies including bassinet, arms and brake, transport handle, side panels, and mounting hardware.

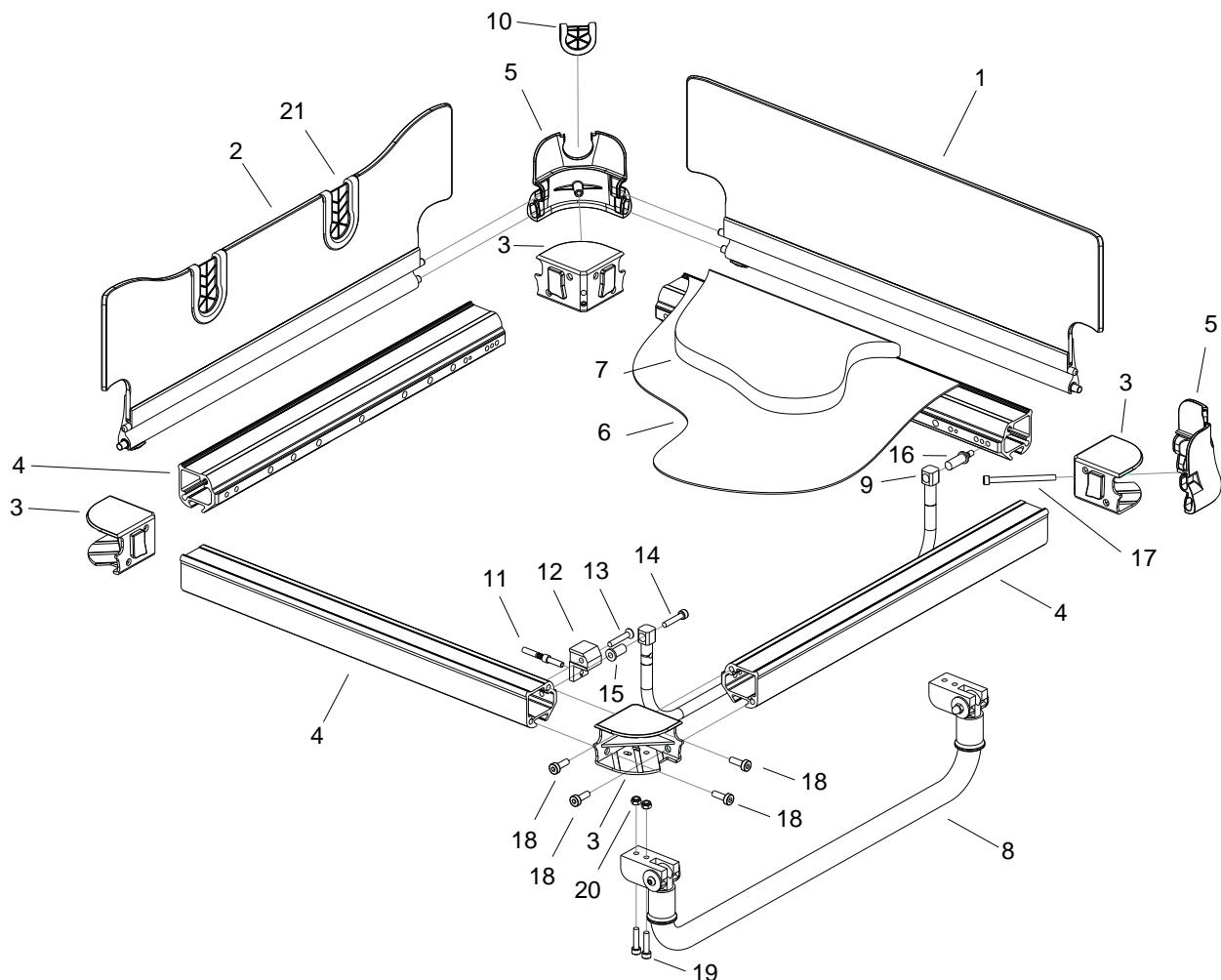
8.1.1 BASSINET ASSEMBLY PARTS LIST

Item	Part Number	Description
1	043042191	Bassinet (3) Side Blank Spare – refer section 8.4.3
	043042192 *	Bassinet (3) Side Long Spare – refer section 8.4.3
2	043042193	Bassinet (3) Side w/ Inserts Spare – refer section 8.4.2
3	642042043	Block Corner Bassinet
4	642042084	Extrusion Bassinet (3) Painted
	642042023 *	Extrusion Bassinet (3) Long Painted
5	694042167	Cap Corner Keyhole Plastic
6	254040071	Underlay mattress bassinet
	254040073 *	Underlay Mattress Bassinet Long
	694042689 #	Underlay Scales
7	900IW201	Mattress Bassinet IW2G
	900IW213 *	Mattress Long
	254042001 #	Mattress Bassinet - Scales
8	043042190	Handle Bassinet Transport Assembly – refer section 8.3
9	641040811	Handle Rear IW2G
10	694042133	Insert Tube Holder Corner Cap
11	661042045	Cable Brake – Std Bassinet
	661042046 *	Cable Brake – Long Bassinet
12	642042077	Block Handle Stop/Brake Tensioner
13	614042333	Screw M6x35 CSK
14	614040258	Screw M6 x 30 SS Cap
15	693041440	Bush Handle Pivot IW2G
16	694042392	Handle Pivot Pin
17	614040334	Bolt M6 x 75mm Allen Cap SS (Recommended torque 1.2Nm)
18	614040309	Screw M8 x 20 Cap Low Profile
19	614042006	Screw M6 x 25 Cap SS
20	621040524	Nut M6 Nyloc ZPS
21	694042132	Insert Tube Holder Bassinet Side
22	193610025	Adhesive Tape 4950VHB 25m roll (Attaches underlay to extrusion, usage 2.2m required per bassinet)

* Denotes substitute part number for long bassinet.

Denotes substitute part number for use with 900IW230 neoweigh™ in bed Scales

8.1.2 BASSINET ASSEMBLY DIAGRAM



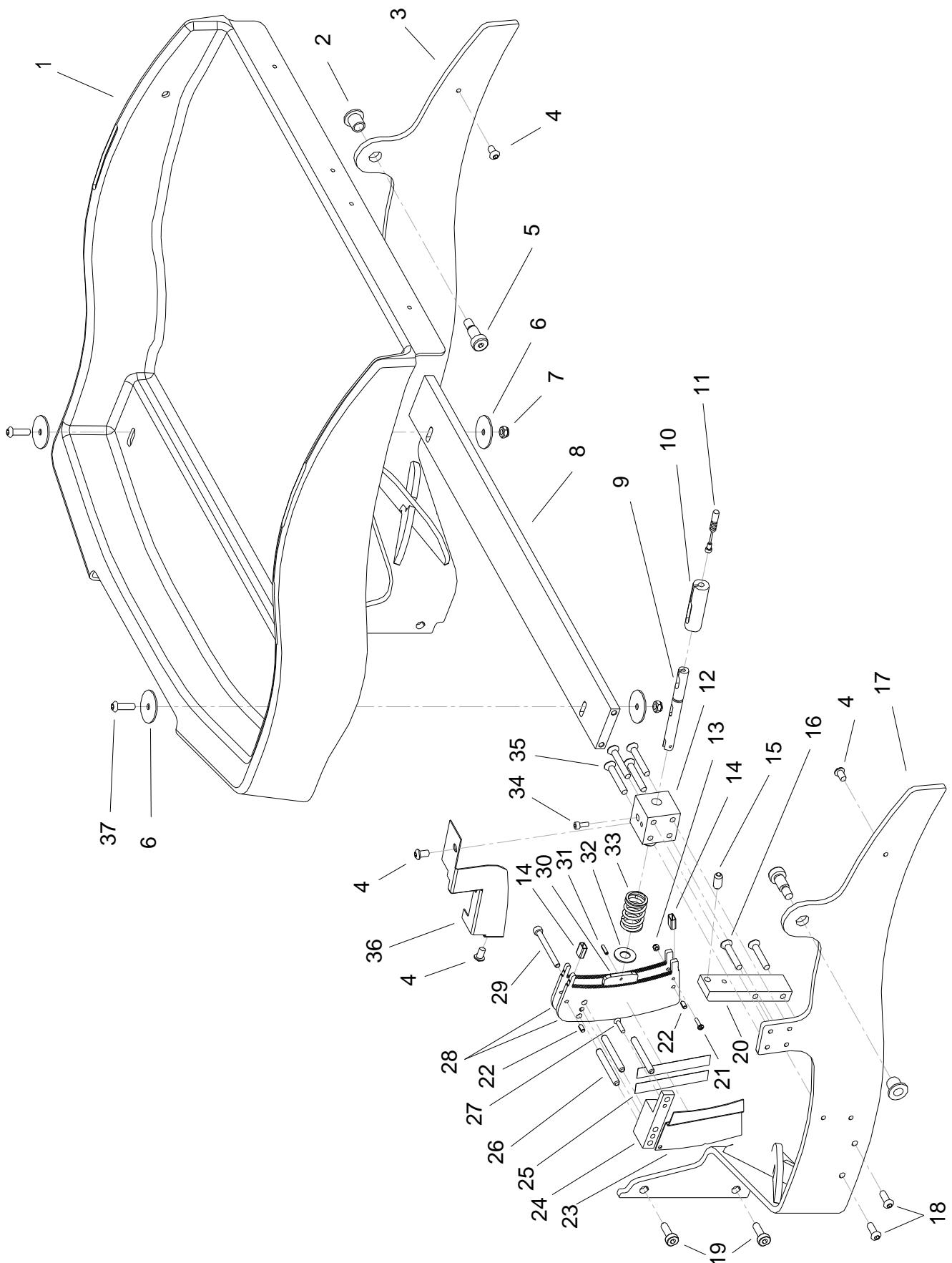
8.2 BASSINET ARMS AND BRAKE ASSEMBLY

8.2.1 BASSINET ARMS AND BRAKE ASSEMBLY PARTS LIST

Item	Part Number	Description
1	694042307	Lid Storage Drawer
2	642042076	Bush Bassinet
3	642042065	Arm Warmer – Left
4	614040254	Screw M6x10 Allen S/S Button HD
5	614042335	Bolt Shoulder M8x10x16 ZP
6	622040153	Washer M6x32 S/S
7	621040524	Nut M6 Nyloc ZPS
8	642042075	Brace - Arm Warmer
9	642042074	Rod Brake Actuator
10	642042071	Spacer - Brake Cable
11	661042045	Cable Brake – Std Bassinet
	661042046*	<i>Cable Brake – Long Bassinet</i>
12	642042073	Block – Brake Support
13	621040506	Nut M3 Nyloc
14	331042074	Heatshrink Tubing DWTC Clear
15	661042051	Ball Stop Plastic
16	614042333	Screw M6x35 CSK HD S/S Allen
17	642042066	Arm Warmer – Right
18	614040230	Screw M6x16 Allen S/S Butn HD
19	614040309	Screw M8x20 Cap Low Profile
20	642042072	Bracket Brake Ballstop Support
21	614040036	Screw M3x12 Pan Pozi ZN/ST
22	621042016	Pin Bissell Dia. 4x8 S/S
23	642042091	Safety Guard – Brake Rack
24	642042070	Spacer Block – Brake Rack
25	188042001	Tape 3M VHB9473 12.7x54.8m
26	661042055	Pin Dowel Dia. 6x50 S/S
27	610042037	Screw M4x16 CSK Phlps SS
28	642042080	Brake Rack – Fixed Section
29	614040336	Screw M5x50 Cap SS
30	642042081	Brake Rack – Moveable Section
31	661042049	Rollpin Dia 3x12 Bissel SS
32	621042011	Washer M10x21x1.25 Flat SS
33	661042047	Spring Bassinet Brake
34	610042036	Screw M4x10 Allen HD SS
35	614040213	Screw M6x40 CSK Allen Head S/S
36	642042092	Safety Guard – Brake Mechanism
37	614042332	Screw M6x20 Allen S/S Butn HD

* Denotes substitute part number for long bassinets

8.2.2 BASSINET ARMS AND BRAKE ASSEMBLY DIAGRAM



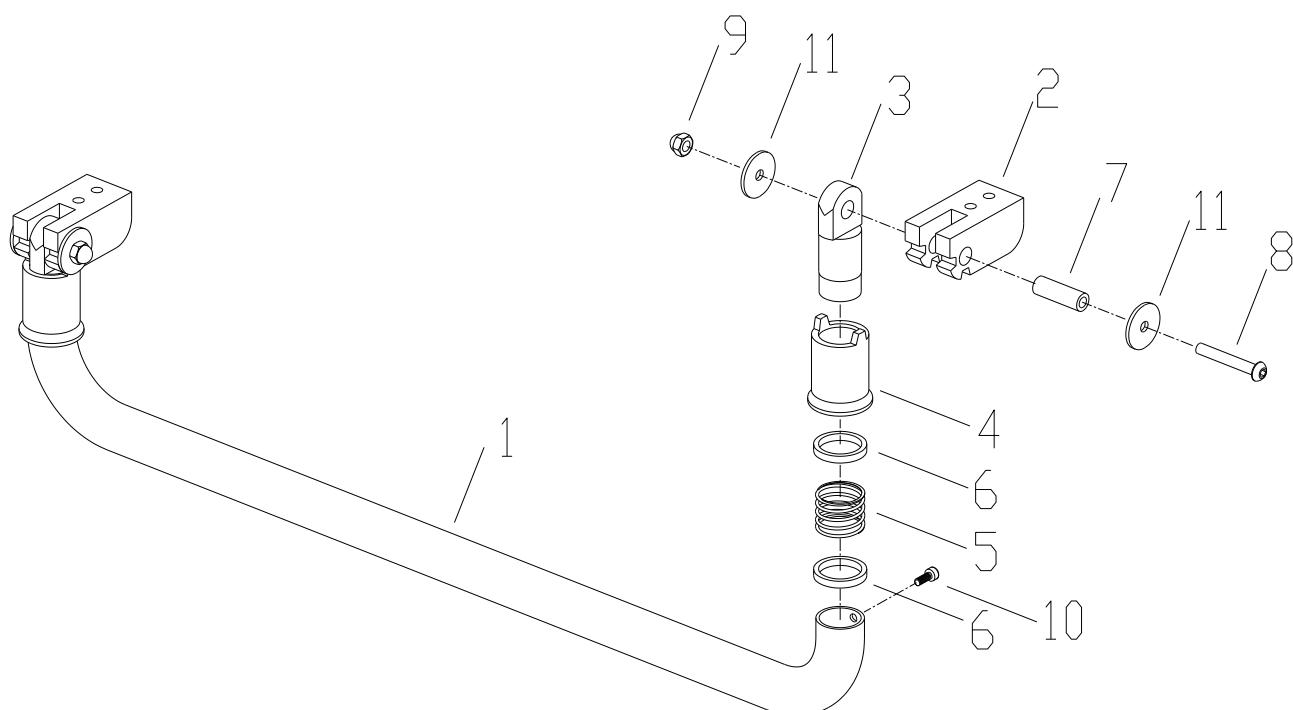
8.3 BASSINET TRANSPORT HANDLE ASSEMBLY

The transport handle (part #043042190) can only be fitted to CosyCot™ models with bassinets version 2.5 and greater.

8.3.1 BASSINET TRANSPORT HANDLE PARTS LIST

Item	Part Number	Description
1	642042030	Handle Tubular SS
2	642042033	Bracket Hinge Handle
3	642042031	Plug Hinge Handle SS
4	642042032	Collar Release Handle SS
5	661042028	Spring Push Handle
6	694042143	Bush Acetyl Slider Handle
7	694042144	Bush Acetyl Hinge Handle
8	614042005	Screw M6 x 40 Button Head SS
9	621040521	Nut M6 Dome Brass Chrome Plated
10	614042007	Screw M4 x 8 Low Profile
11	694042180	Washer Acetyl Hinge Handle

8.3.2 BASSINET TRANSPORT HANDLE ASSEMBLY DIAGRAM

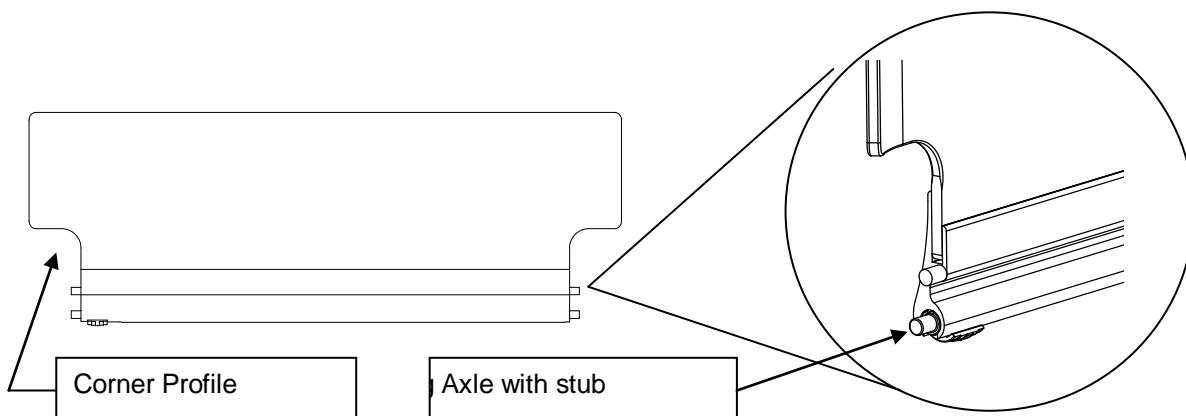


8.4 BASSINET SIDE PANEL ASSEMBLY (IW93X & IW95X)

8.4.1 BASSINET SIDE PANEL IDENTIFICATION

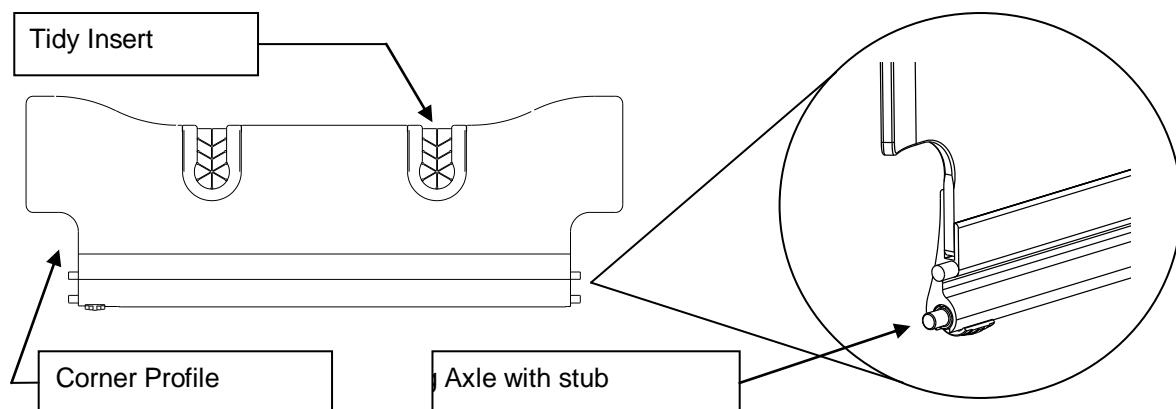
043042191/043042192* Bassinet (3) Blank Side Panels (*Long)

These are lift and fold side panels that will only fit on version 2.5, 3.0 and 3.1 bassinets.



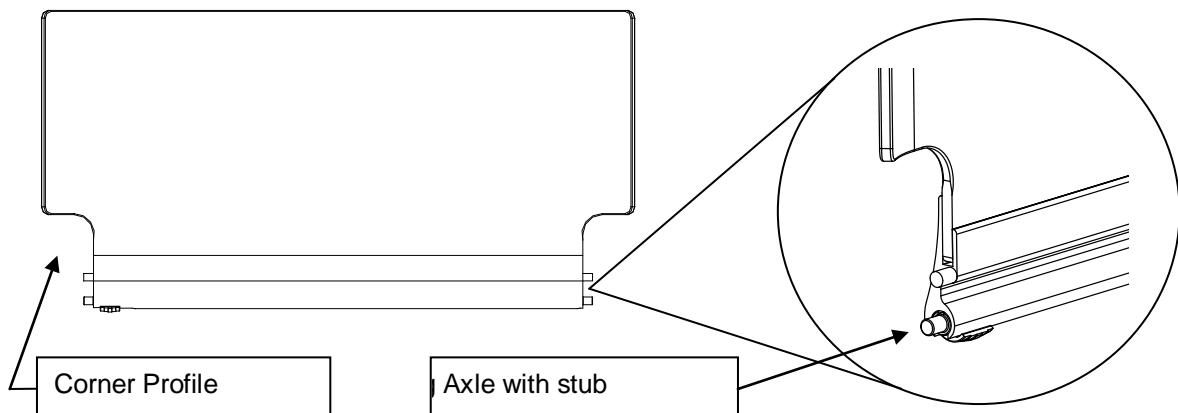
043042193 Bassinet (3) Side Panel with Inserts

This is a lift and fold side panel that will only fit on version 2.5, 3.0 and 3.1 bassinets.



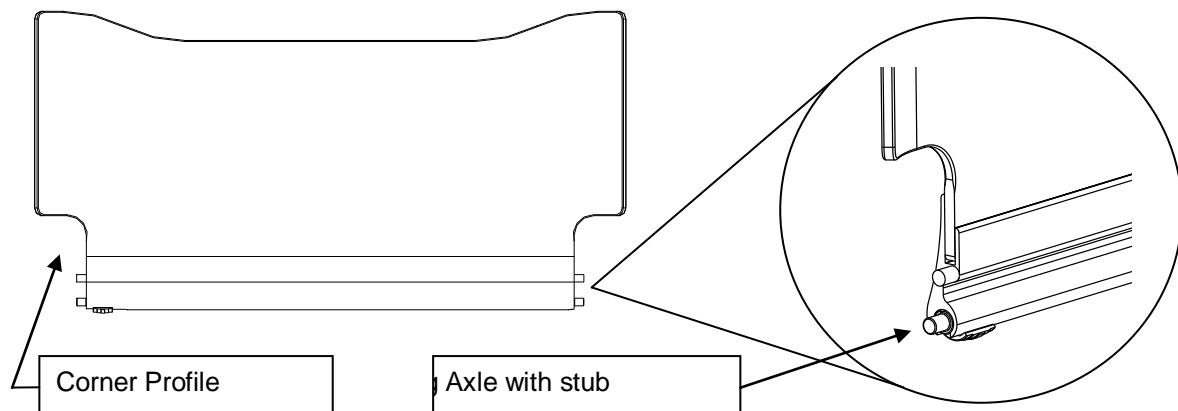
043042509/043042561* Bassinet (3) Side Panel High Blank (*Long)

This is a lift and fold side panel that will only fit on version 2.5, 3.0 and 3.1 bassinets.



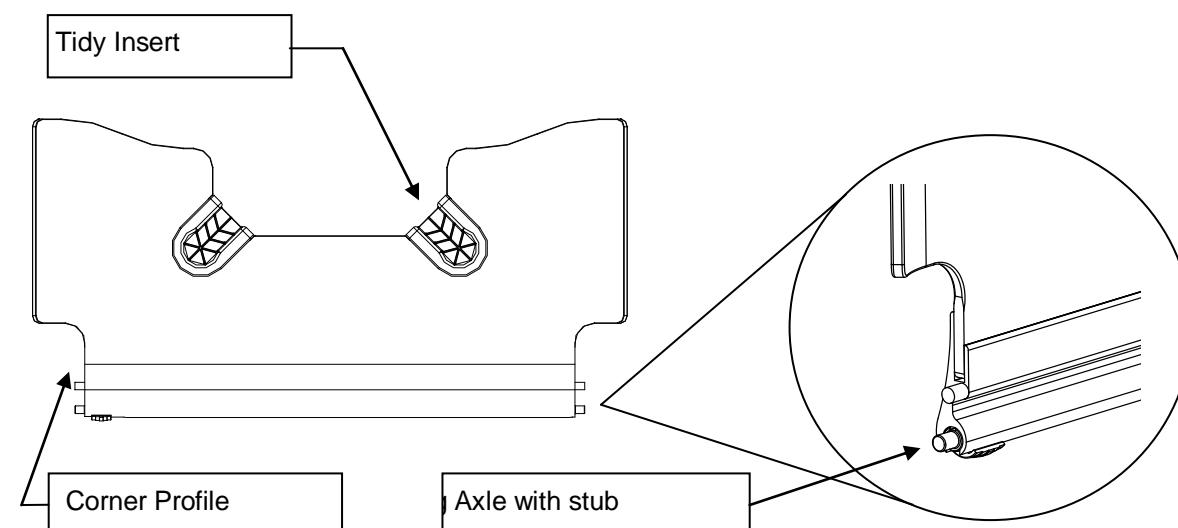
043042510 Bassinet (3) Side Panel High Front

This is a lift and fold side panel that will only fit on version 2.5, 3.0 and 3.1 bassinets



043042511 Bassinet (3) Side Panel High Back with Inserts

This is a lift and fold side panel that will only fit on version 2.5, 3.0 and 3.1 bassinets



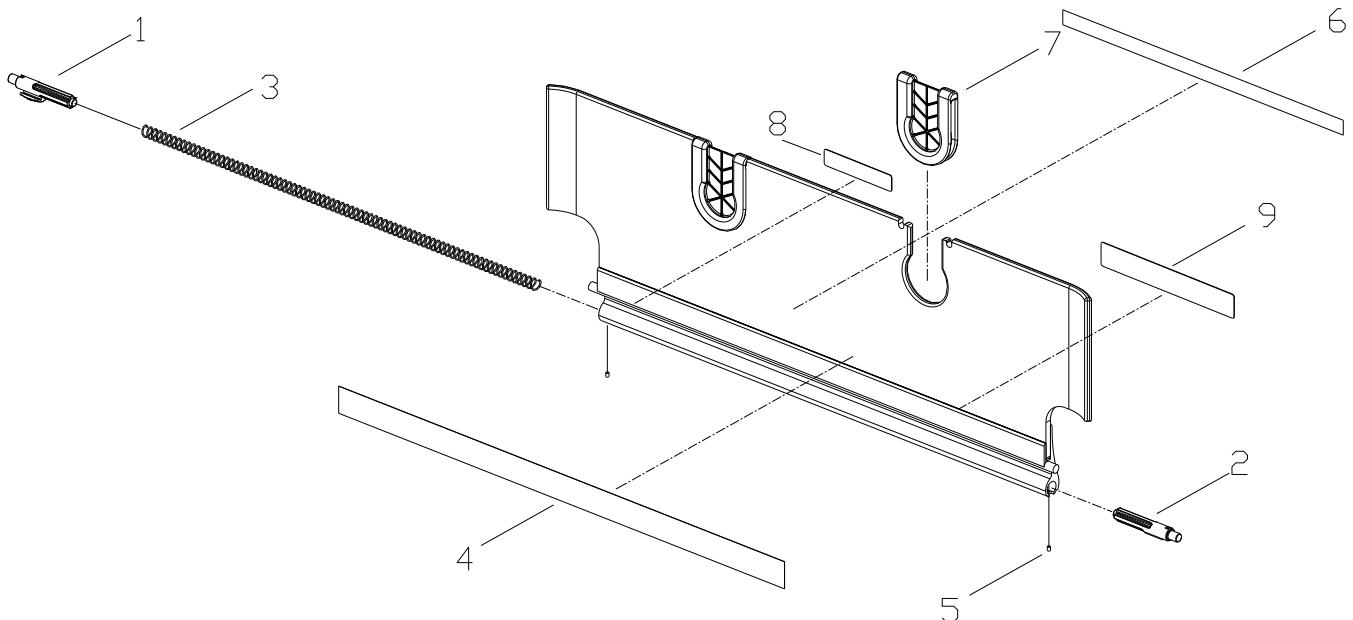
8.4.2 043042193 BASSINET (3) SIDE PANEL WITH INSERTS

Bassinet (3) Side Panel with Inserts Parts List

Item	Part Number	Description
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
4	183042046	Label Blank Side Panel (3)
5	614040287	Screw M3 x 4 Grub Knurled
6	183042171	Sticker X-Ray Tray End Blue (Letters)
7	694042132	Insert Tube Holder - Bassinet side
8	183042131 *	Label "F&P" 71x17mm IW2G
9	183042130 *	Label "Cosycot" 140x25mm IW2G

* Not included in kit. Can be ordered separately.

Bassinet (3) Side Panel with Inserts Assembly Diagram



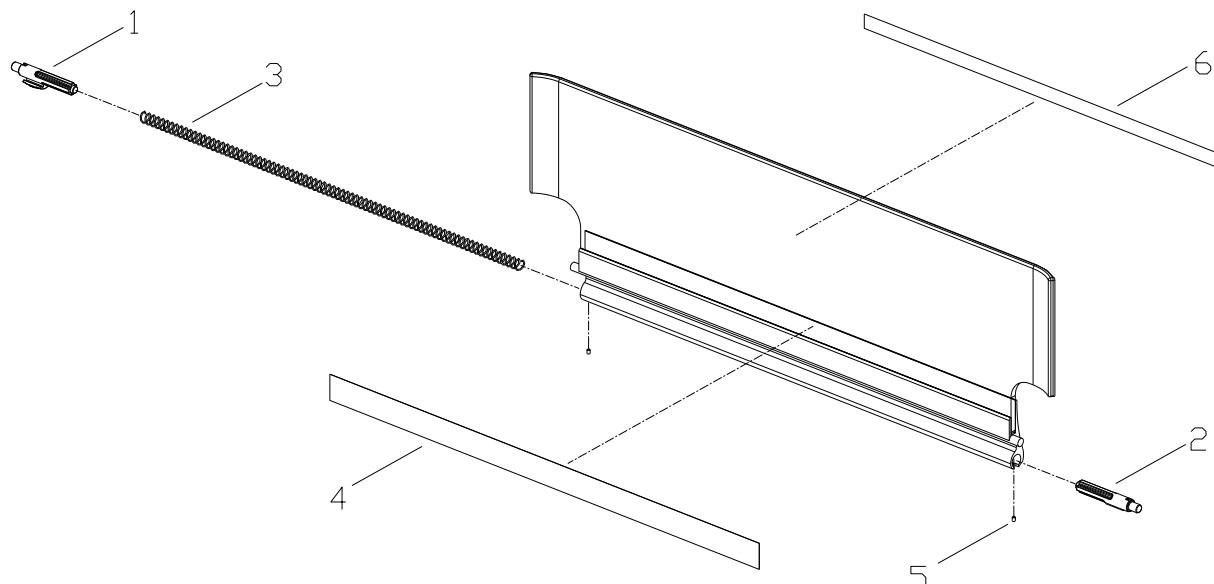
8.4.3 043042191 BASSINET (3) BLANK SIDE PANEL (043042192* LONG)

Bassinet (3) Blank Side Panel Parts List

Item	Part Number	Description
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
	661042032 *	Spring Bassinet Side (3) Long
4	183042046	Label Blank Side Panel (3)
	183042047 *	Label Blank Side Panel (3) Long
5	614040287	Screw M3 x 4 Grub Knurled
6	183042170	Sticker X-Ray Tray Side Blue (Numbers)

* Denotes substitute part numbers for long side panels (043042192) as used on the Long Bassinet.

Bassinet (3) Blank Side Panel Assembly Diagram



8.4.4 043042510 BASSINET (3) SIDE PANEL HIGH FRONT

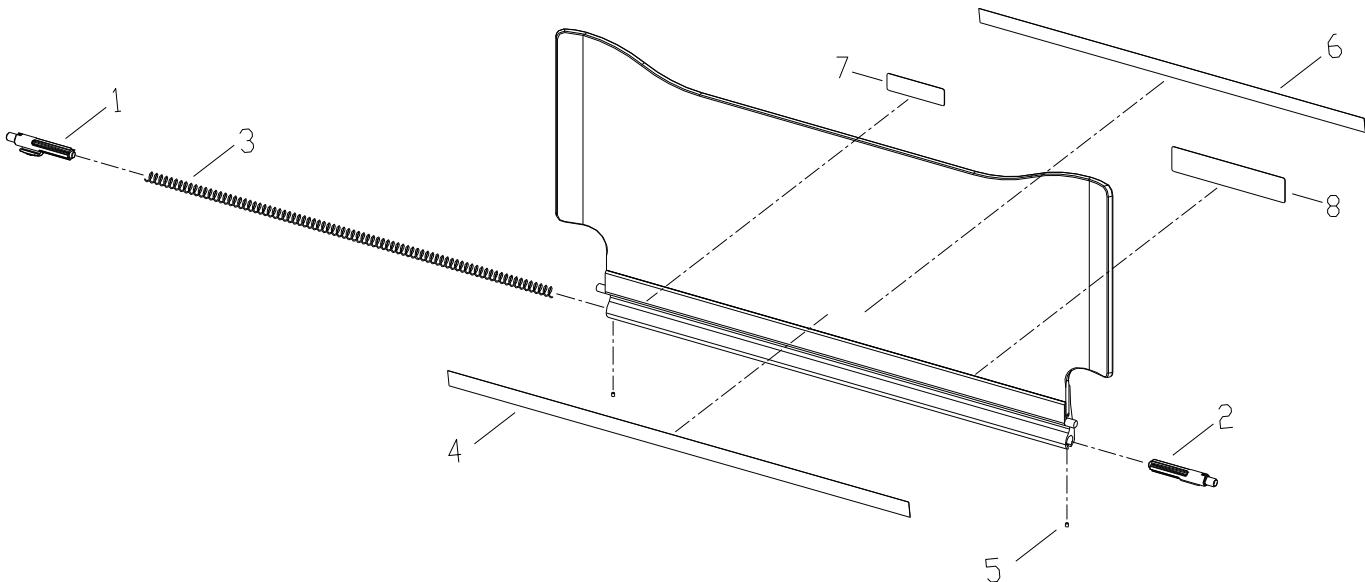
Side Panel is 23cm high as measured from the bassinet & 25.5cm at the end.

Bassinet (3) Side Panel High Front Parts List

Item	Part Number	Description
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
4	183042046	Label Blank Side Panel (3)
5	614040287	Screw M3 x 4 Grub Knurled
6	183042171	Sticker X-Ray Tray End Blue (Letters)
7	183042131 *	Label "F&P" 71x17mm IW2G
8	183042130 *	Label "Cosycot" 140x25mm IW2G

* Not included in kit. Can be ordered separately.

Bassinet (3) Side Panel High Front Assembly Diagram



8.4.5 043042509 BASSINET (3) SIDE PANEL HIGH BLANK (043042561* LONG)

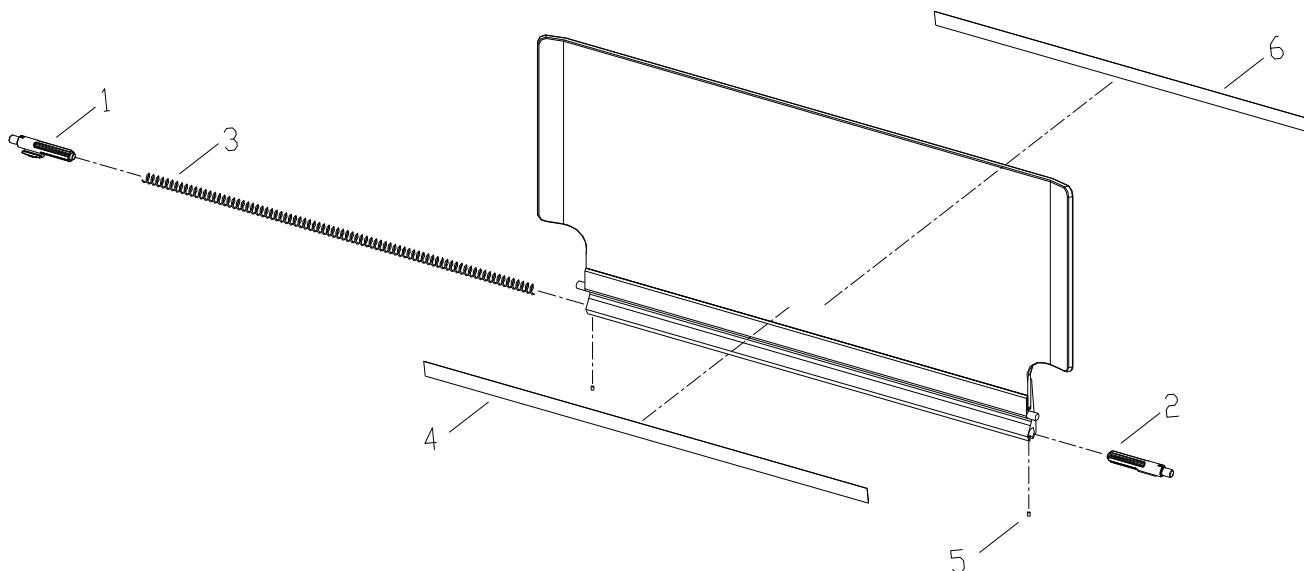
Side panel is 25.5cm high as measured from the bassinet.

Bassinet (3) Side Panel High Blank Parts List

Item	Part Number	Description
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
3	661042032	* Spring Bassinet Side (3) Long
4	183042046	Label Blank Side Panel (3)
4	183042047	* Label Blank Side Panel (3) Long
5	614040287	Screw M3 x 4 Grub Knurled
6	183042170	Sticker X-Ray Tray Side Blue (Numbers)

* Denotes substitute part numbers for long side panels (043042xxx) as used on the Long Bassinet.

Bassinet (3) Side Panel High Blank Assembly Diagram

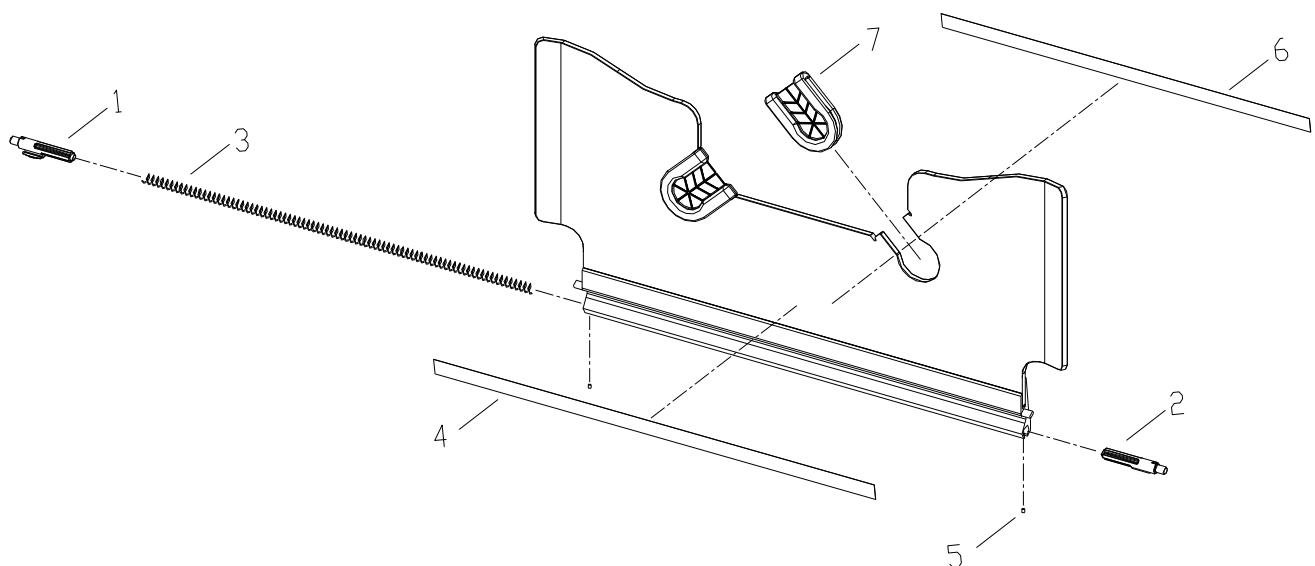


8.4.6 043042511 BASSINET (3) SIDE PANEL HIGH BACK WITH INSERTS

Bassinet (3) Side Panel High Back Parts List

Item	Part Number	Description
1	694042168	Axle Sliding (3)
2	694042169	Axle Sliding Machined (3)
3	661042031	Spring Bassinet Side (3)
4	183042046	Label Blank Side Panel (3)
5	614040287	Screw M3 x 4 Grub Knurled
6	183042171	Sticker X-Ray Tray End Blue (Letters)
7	694042132	Insert Tube Holder - Bassinet side

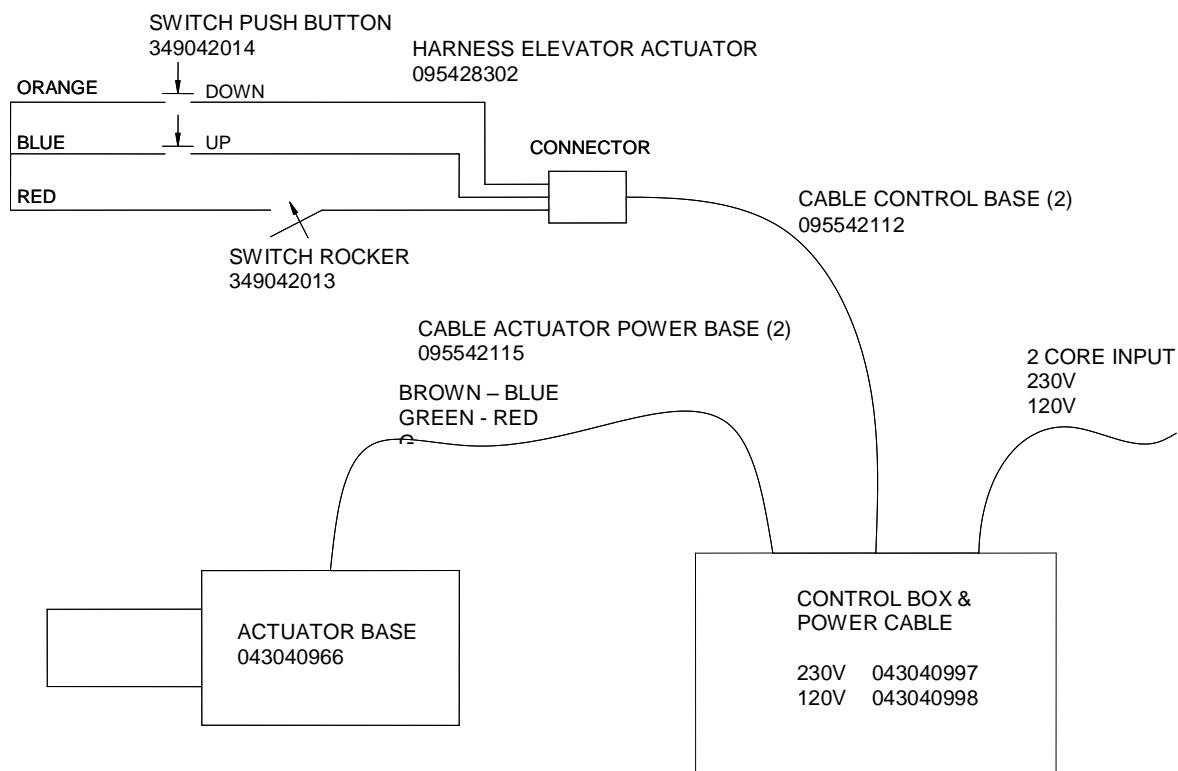
Bassinet (3) Side Panel High Back Assembly Diagram



Intentionally Blank

PART 9: IW93X/95X COSYCOT™ BASE ASSEMBLY

9.1.1 ELEVATOR BASE SYSTEM WIRING DIAGRAM



9.1.2 IW93X/95X COSYCOT™ ELEVATOR BASE ASSEMBLY PARTS LIST

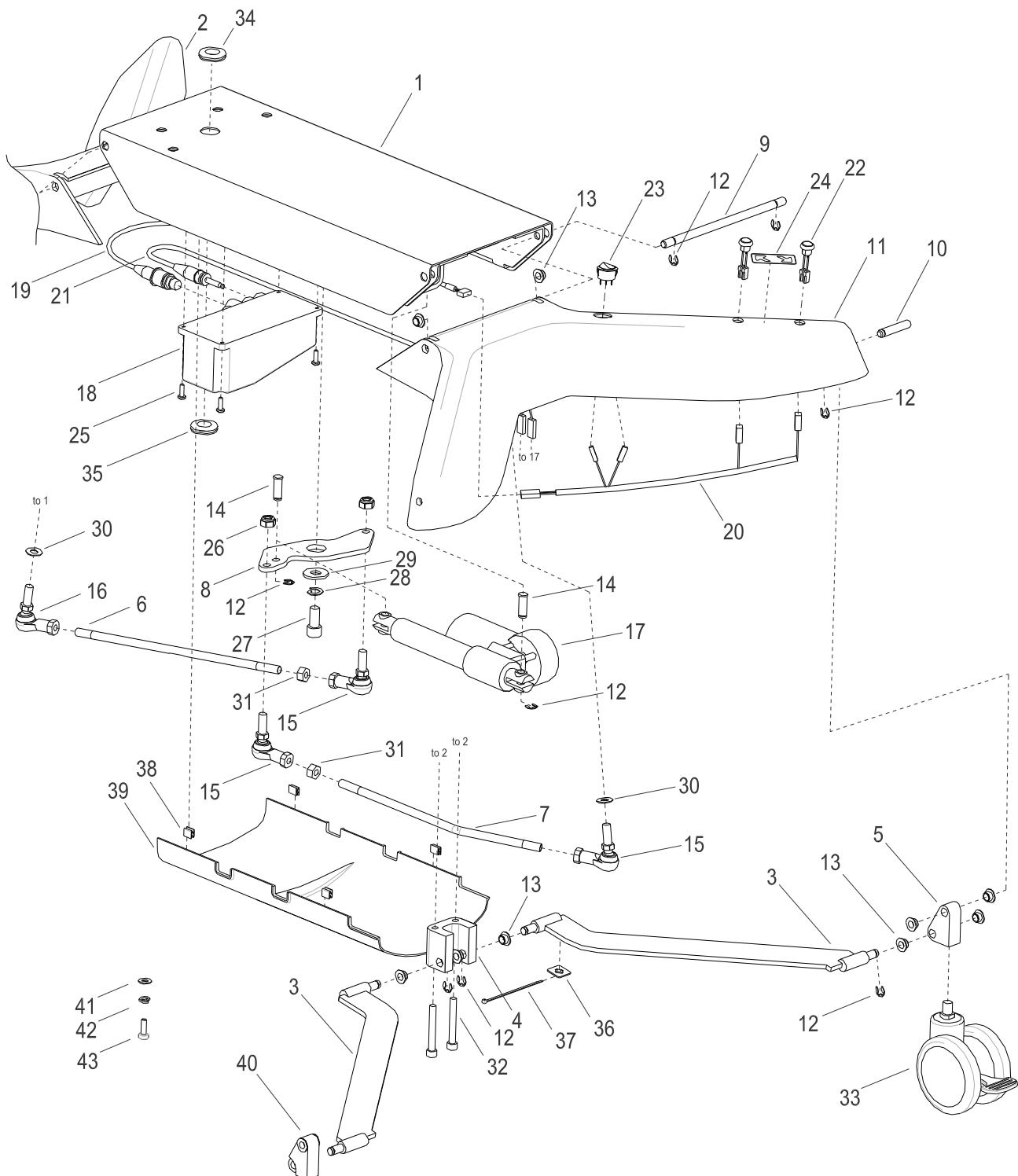
Item	Part Number	Description
1	642042162	Frame Base (2) CosyCot™
2	642042163	Leg Cast Base (2)
3	642042164	Link Parallel Base (2)
4	642042165	Anchor Link Base (2)
5	642042166	Foot Link Base (2) Left
6	642042167	Push Rod Straight Base (2)
7	642042168	Push Rod Bent Base (2)
8	642042169	Plate Pivot Base (2)
9	642042170	Axle Leg Base (2)
10	642042171	Axle Foot Base (2)
11	642042173	Leg Cast Base (2) Control
12	625060030	Circlip Ellison E Type 8 mm
13	694042706	Bush Flanged 10x7 Base (2)
14	651040209	Pin Cylinder Base Elevator
15	661042088	Balljoint M10 RH Base (2)
16	661042089	Balljoint M10 LH Base (2)
17	043040966	Actuator Base Height Adjustment
18	043040997	Control box and power cable for 230V models
	043040998	Control box and power cable for 120V models
19	095542112	Cable Control Base (2)
20	095428302	Harness Elevator Actuator
21	095542115	Cable Actuator Power Base (2)
22	349042014	Switch Button w/ Connector base (2)
23	349042013	Switch Rocker Oval Base (2)
24	183042174	Label Elevator Base (2)
25	614042339	Screw M5 x 12 Cap Black
26	621040540	Nut M10 Nyloc
27	614042342	Screw M12 x 25 Cap Black
28	622040624	Washer Spring 12mm
29	622040525	Washer 9/16" x 11/4 x 3mm ZPL
30	622040133	Washer M10 Flat ZN/ST
31	621040942	Nut M10 Hex ZN/ST
32	614042340	Screw M8 x 60 Cap Black
33	661042087	Castor 100mm Base (2)
34	100045	Grommet Rubber R314/13 Blk
35	694042710	Grommet Black Rubber 25x3.2mm
36	100122	Adhesive Mount DAMB20
37	188040023	Tie Plastic Ratchet 2.5mm Blk
38	621042024	Clip Edge Panel 3mm/1mm
39	643040076	Cover base bottom
40	642042175	Foot Link Base (2) Right
41	100556	Washer M8 x 17 flat SS304
42	622040132	Washer M8 Spring Zn/St
43	614040309	Screw M8 x 20 Cap Low Profile SS

NOTE: Complete Base assembly available as Part No.

043041122 - 230V
043041123 - 120V

NOTE: To adjust base level refer Section 4.8.3

9.1.3 IW93X/95X COSYCOT™ ELEVATOR BASE ASSEMBLY DIAGRAM



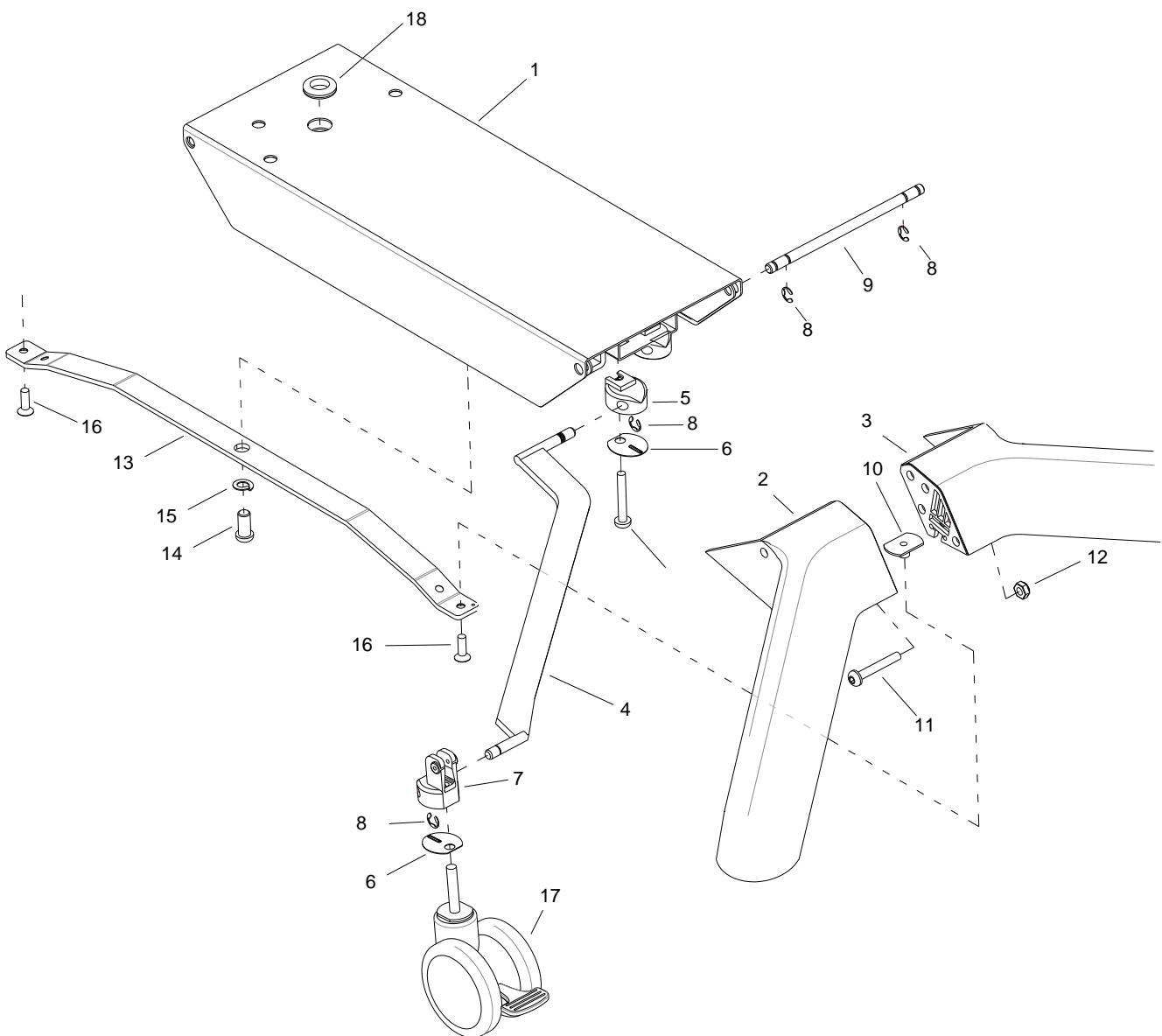
**9.1.4 IW93X/95X COSYCOT™ FIXED BASE ASSEMBLY PARTS LIST (FOR FIXED BASES
MANUFACTURED PRIOR TO AUGUST 2009)**

<i>Item</i>	<i>Part Number</i>	<i>Description</i>
1	648040147	Frame base IW2G
2	696040175	Leg left plastic
3	696040174	Leg right plastic (holes for switches available on request)
4	651040194	Rod parallel linkage
5	693040757	Bracket parallel link foot
6	641040828	Plate security circlip foot
7	693040725	Foot leg plastic
8	625060030	Circlip Ellison E type 8 mm
9	651040193	Rod pivot leg 10 mm
10	641040778	Base tee nut M8 zp
11	614040320	Screw M8x55 button head
12	100498	Nut M8 Nyloc
13	642042068	Bar Adjustment Preset Base
14	614040614	Screw M12x25 Allen s/s button
15	622040624	Washer spring 12 mm
16	610042035	Screw M8x25 csk
17	665040015	Castor twin wheel 100 mm locking
18	100045	Grommet rubber R314/13 blk

NOTE: Item 17 available as set of 4, Part No. 043041239

NOTE: To adjust preset base refer to Section 4.8.2

9.1.5 IW93X/95X COSYCOT™ FIXED BASE ASSEMBLY DIAGRAM (FOR FIXED BASES MANUFACTURED PRIOR TO AUGUST 2009)

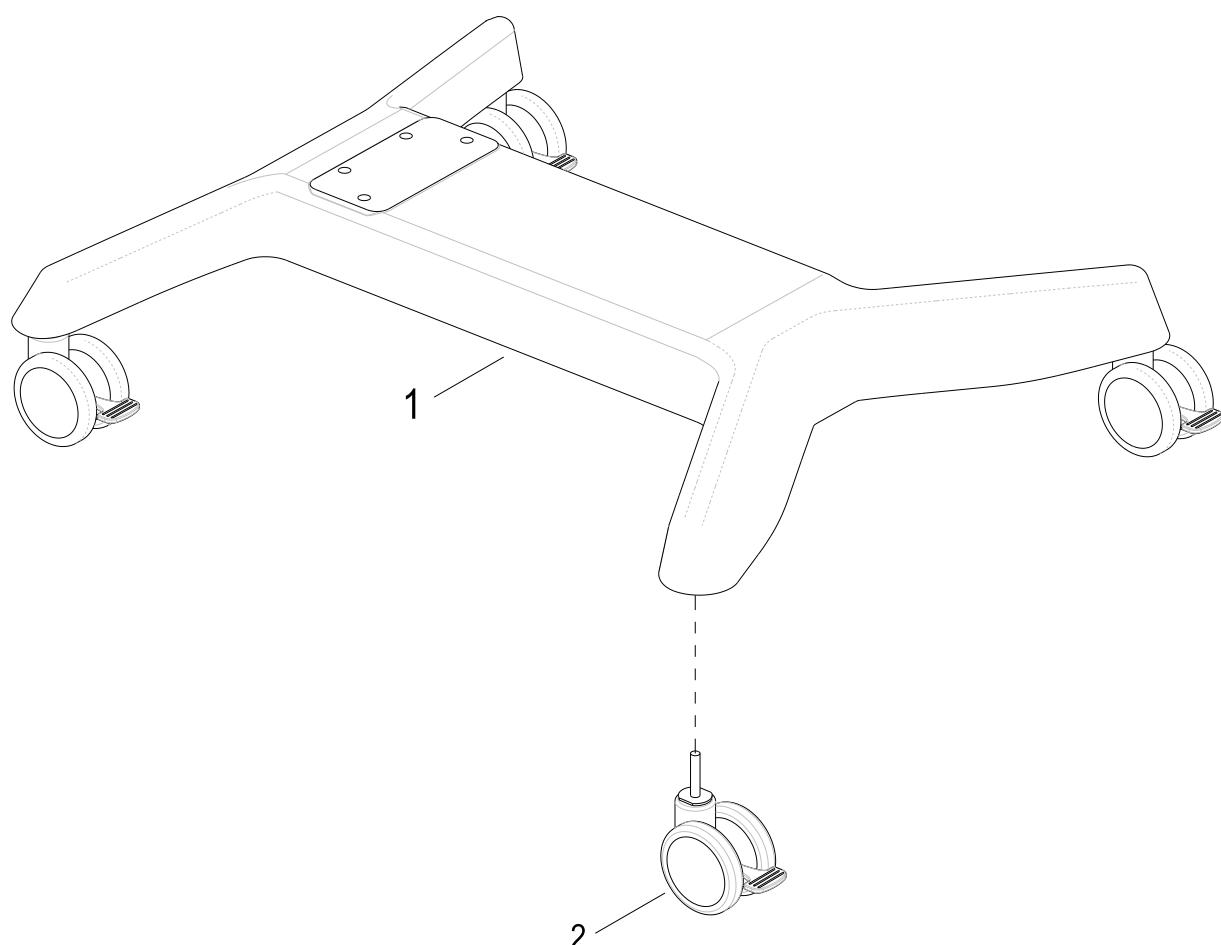


9.1.6 IW93X/95X COSYCOT™ FIXED BASE ASSEMBLY PARTS LIST (FOR FIXED BASES MANUFACTURED AFTER AUGUST 2009)

<i>Item</i>	<i>Part Number</i>	<i>Description</i>
1	642042192	Base Preset Cast
2	665040015	Castor Twin Wheel 100mm w/ lock – M10 Threaded Stem (August 2009 until January 2010)
	661042087	Castor 100mm Base (2) – M12 Threaded Stem (From January 2010)

NOTE: Complete Base assembly available as Part No. 043041121

**9.1.7 IW93X/95X COSYCOT™ FIXED BASE ASSEMBLY DIAGRAM (FOR FIXED BASES
MANUFACTURED AFTER AUGUST 2009)**

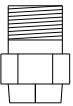
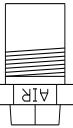
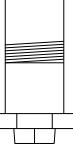
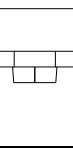
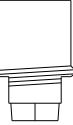
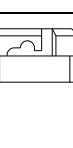


PART 10: GAS ACCESSORIES

WARNING

- ⚠ Many of our gas accessories are used with oxygen, which poses a serious fire hazard.
Ensure that all dealings with gas accessories are performed in a clean environment and extra care is taken to ensure that no oil, glues or particles contaminate the gas systems. Particles that enter a high-pressure oxygen enriched environment will combust at much lower temperatures than normal.
- ⚠ Never oil or grease oxygen equipment. Both oil and grease oxidise readily and in the presence of oxygen will burn violently.

10.1 GAS FITTING IDENTIFICATION

	DIAMETER INDEX SAFETY SYSTEM (DISS) OXYGEN FITTINGS 655040070 – Outlet/Demand valve (prominent central valve plunger) 655040073 – Inlet/Check valve (recessed central valve plunger)
	DISS AIR FITTINGS 655040080 – Outlet/Demand valve (prominent central valve plunger) 655040104 – Inlet/Check valve (recessed central valve plunger)
	SCHRADER OUTLET VALVES 655040105 – Outlet/Demand valve – AIR (marked AIR) 655040106 – Outlet/Demand valve – OXYGEN (marked OXY)
	NON-INTERCHANGEABLE SCREW-THREADED (NIST) INLET (with check valve) 655040085 – Inlet/Check valve – OXYGEN (marked OXY) 655040086 – Inlet/Check valve – AIR (marked AIR)
	SLEEVE INDEX SYSTEM (AUST) GAS FITTINGS 655040102 – Outlet valve – OXYGEN (prominent central valve plunger) 655040103 – Outlet valve – AIR (prominent central valve plunger) 655040109 – Inlet Valve – AIR (recessed central valve plunger) 655040110 – Inlet Valve – OXYGEN (recessed central valve plunger)
	NIST INLET FITTING (no check valve) 655040440 – Valve Inlet Oxy NIST Used on 900IW153K only
	SUCTION OUTLET FITTING (no check valve) 655040112 – Valve Outlet Oxygen UK Used on 900IW153K only
	FRENCH INLET VALVES ASSOCIATION FRANCAISE DE NORMALISTION (AFNOR) 655040116 – Valve Inlet Oxy French (marked O ₂) 655040117 – Valve Inlet Air French (marked AIR)

10.2 GAS ACCESSORY SERVICE INFORMATION

WARNING  Prior to servicing ensure gas system is depressurised by either opening a flowmeter or activating an outlet valve until flow stops.

10.2.1 LEAK TESTING

For 900IW10X Gas Supply Modules a leak test can be performed using the cylinder pressure gauges as follows:

- Do a visual check on all fittings and ensure all flowmeters are turned off.
- Disconnect all gas hoses and accessories from the inlets and outlets. Ensure the flowmeter outlets are blocked.
- Prior to connection to any cylinder momentarily open and close the cylinder valve to expel any foreign matter.
- Connect a cylinder to the appropriate gas yoke ensuring that a Bodok washer (622040157) is in place and in good condition.

NOTE: An air cylinder will also need to be connected if testing a 900IW102/104/106

- Open the cylinder valve S-L-O-W-L-Y and charge up the gas system to preferably over 1500psi (10.3Mpa).
- Check for any audible leaks before closing off the cylinder valve. The cylinder can now be removed from the yoke.
- Leave for fifteen minutes before checking the appropriate cylinder pressure gauge for any evidence of leakage.
- If a leak is detected use liquid leak detector around the fittings to the identify leak point which will create bubbles and repair as necessary.

For other gas accessories a separate pressure gauge should be connected to one of the outlet fittings and the system pressurised to at least 50psi (345kPa).

- Check for audible leaks before closing off the gas supply and leaving for 15 minutes.
- Check to see that leakage is less than 4psi (26kPa) after this time.
- If a leak is detected use liquid leak detector around the fittings to the identify leak point which will create bubbles and repair as necessary.

If hoses are to be tested the gas supply will need to be able to be isolated from the hose.

10.2.2 ADJUSTING REGULATOR OUTPUT PRESSURE ON 900IW101-106 GAS SUPPLY MANIFOLDS (FOR MANIFOLDS SUPPLIED PRIOR TO JANUARY 2009)

The set pressure should be $60 \pm 5\text{psi}$ ($414 \pm 34\text{kPa}$) or $50 \pm 5\text{psi}$ in the USA. Generally the set pressure should be $3-5\text{psi}$ ($20-34\text{kPa}$) below the hospital wall supply to ensure that the wall supply will be utilised before the cylinder.

1. Attach a calibrated 0-100psi pressure gauge to one of the low pressure outlets on the manifold.
2. Prior to connection of the cylinder momentarily open and close the cylinder valve to expel any foreign matter.
3. Connect a cylinder to the appropriate gas yoke ensuring that a Bodok washer (622040157) is in place and in good condition.
4. Open the cylinder valve S-L-O-W-L-Y and charge up the gas system.
5. Gently insert a 6mm Allen Key into the opening on the end of the regulator and lower the set pressure by turning the Allen key anti-clockwise by approximately $\frac{1}{2}$ a turn.

CAUTION Do not insert the Allen Key more than 30mm into the regulator, if the Allen key hits the bottom of the hole you have inserted it too far and you may damage the regulator.

6. Bleed some pressure out of the manifold by turning on a flowmeter if fitted or pressing on the central button of one of the gas fittings.
7. Check the calibrated pressure gauge – after bleeding it should read below 50psi.
8. Slowly turn the Allen key clockwise while checking the calibrated pressure gauge until the pressure reads your preferred pressure. If you overshoot the preferred pressure return to step 6 and repeat.

NOTE: For 900IW102/104/106 Gas Supply Oxy/Air Manifolds this procedure must be completed for both Oxygen and Air regulators separately.

10.2.3 INSTALLING GAS FITTINGS

All external gas fittings for the connection of low-pressure gas hoses have $\frac{1}{4}$ " NPT male threads. This is an American standard tapered thread that seals with assistance from oxygen approved Teflon tape.

WARNING  **Only Teflon Tape which is "Approved for Oxygen Service" should be used on oxygen gas fittings.**

- Wrap the Teflon seal tape 2-3 times around the threads, leaving 1.5 to 2 ridges exposed at the end of the threads. Wrap in a direction such that the tape is tightened about the fitting when installed.
- The correct torque generally corresponds to 2-3 turns by tool after tightening by hand

NOTE: Be careful, especially when installing 661042014 CONNECTOR MALE ELBOW, not to damage the fittings hex head. A ring spanner or socket should be used.

NOTE: The plastic part of 661042014 CONNECTOR MALE ELBOW can rotate on the metal stud allowing the fitting to be moved to the correct orientation to fit into the column regardless of the thread position.

UNI-FIT SMC One Touch Fittings (661042015)

- This fitting has a special smaller thread that fits in any $\frac{1}{8}$ " tapered female thread. A gasket seals on the chamfer of the thread.
- Tighten the fitting by hand, then give it an additional $\frac{1}{6}$ turn with a wrench.
- Excessive tightening may damage the thread portion or deform the gasket and cause gas leakage.

10.2.4 SMC TUBE INSTALLATION

SMC One-Touch Fittings have a grey plastic face and they allow connections to be established quickly and without tools.

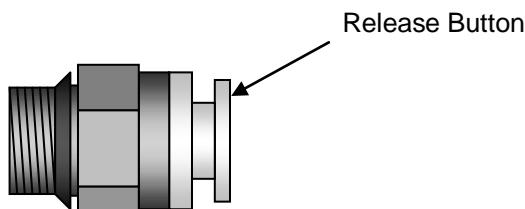
The tube is colour coded with clear used for oxygen and black for air. The fittings used for air have black caps fitted to match the tubing.

SMC Tube Installation

- Ensure the tube is undamaged and the end has been cut square.
- Hold the tube and push it in slowly, inserting it securely all the way into the fitting.
- Pull the tubing back gently to make sure it will not come out. If the tube is not all the way into the fitting gas leakage or disconnection could occur.

SMC Tube Removal

- Push in evenly on the release button.
- Pull out the tubing while holding down the release button so that it does not pop out. If the release button is not pressed down sufficiently, there will be increased bite on the tubing and it will become more difficult to pull it out.



10.3 OXYGEN ADJUSTABLE REGULATOR (498040139) PARTS LIST

WARNING

- ⚠ Oxygen poses a serious fire hazard. Ensure that all dealings with the regulator are performed in a clean environment and extra care is taken to ensure that no oil, glues or particles contaminate the gas systems. Particles that enter a high-pressure oxygen enriched environment will combust at much lower temperatures than normal.
- ⚠ Never oil or grease oxygen equipment. Both oil and grease oxidise readily and in the presence of oxygen will burn violently.
- ⚠ Ensure gas system is depressurised before any maintenance procedure.

In the event of a failure of the regulator replacement parts can be purchased from:

Allied Healthcare Products Inc.
1720 Sublette Avenue
St. Louis MO 63110
Phone: 314 771 2400
Fax: 314 771 2465

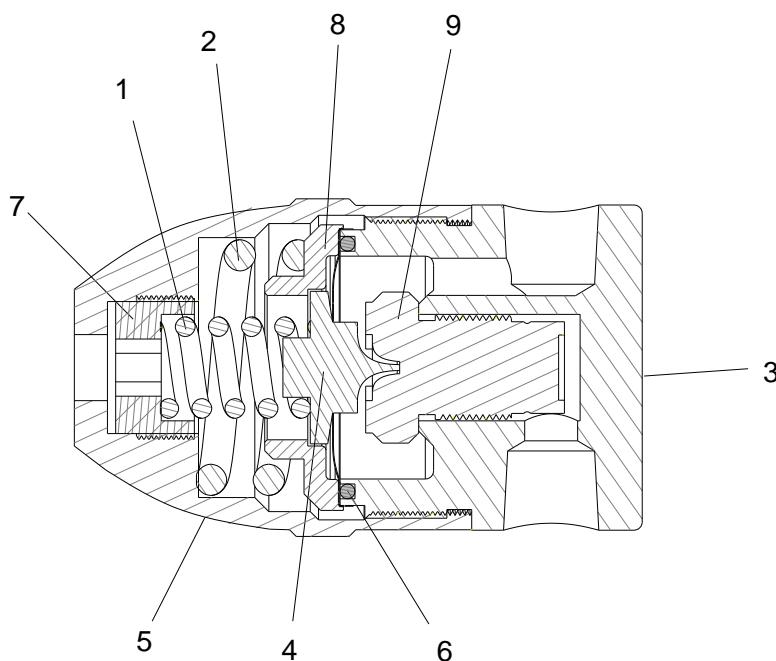
10.3.1 ALLIED HEALTHCARE PRODUCTS INC. PARTS LIST:

Item	Part Number	Description
1	32-90-0023	Diaphragm Spring
2	32-90-0039	Safety Spring
3	31-2647	Brass Body
4	32-90-0007	Diaphragm Assembly
5	32-90-0237	Preset Cap Assembly
6	32-90-0009	Silicon O-Ring
7	32-90-0016	Diaphragm Spring Button
8	32-90-0066	Diaphragm Plate
9	32-900303	Nozzle Assembly

NOTE: 171042008 Spanner Gas Regulator is available from Fisher & Paykel Healthcare to undo Part #5 for servicing.

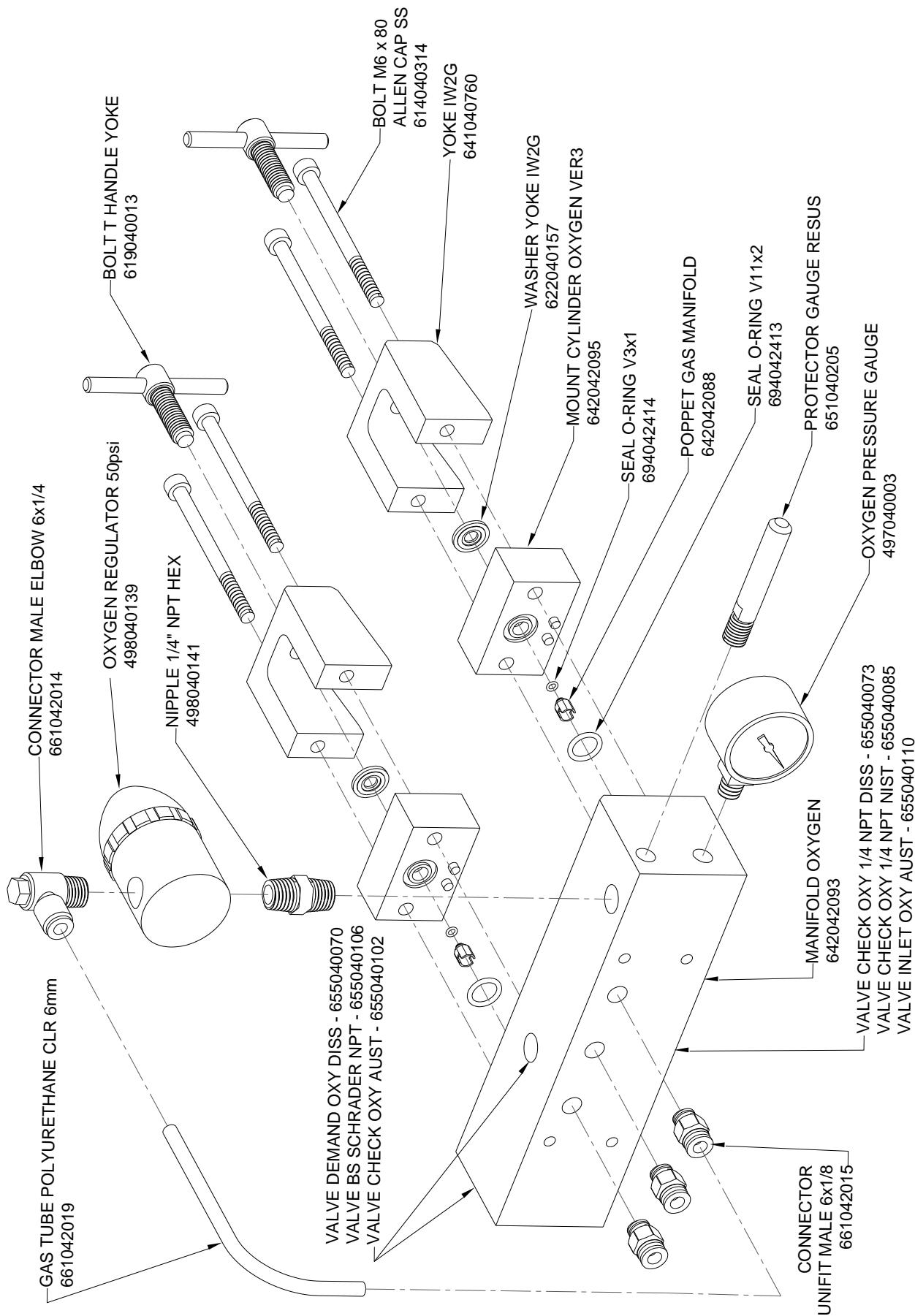
10.3.2 OXYGEN ADJUSTABLE REGULATOR DIAGRAM

Allied Healthcare Part#: 32-10-0320

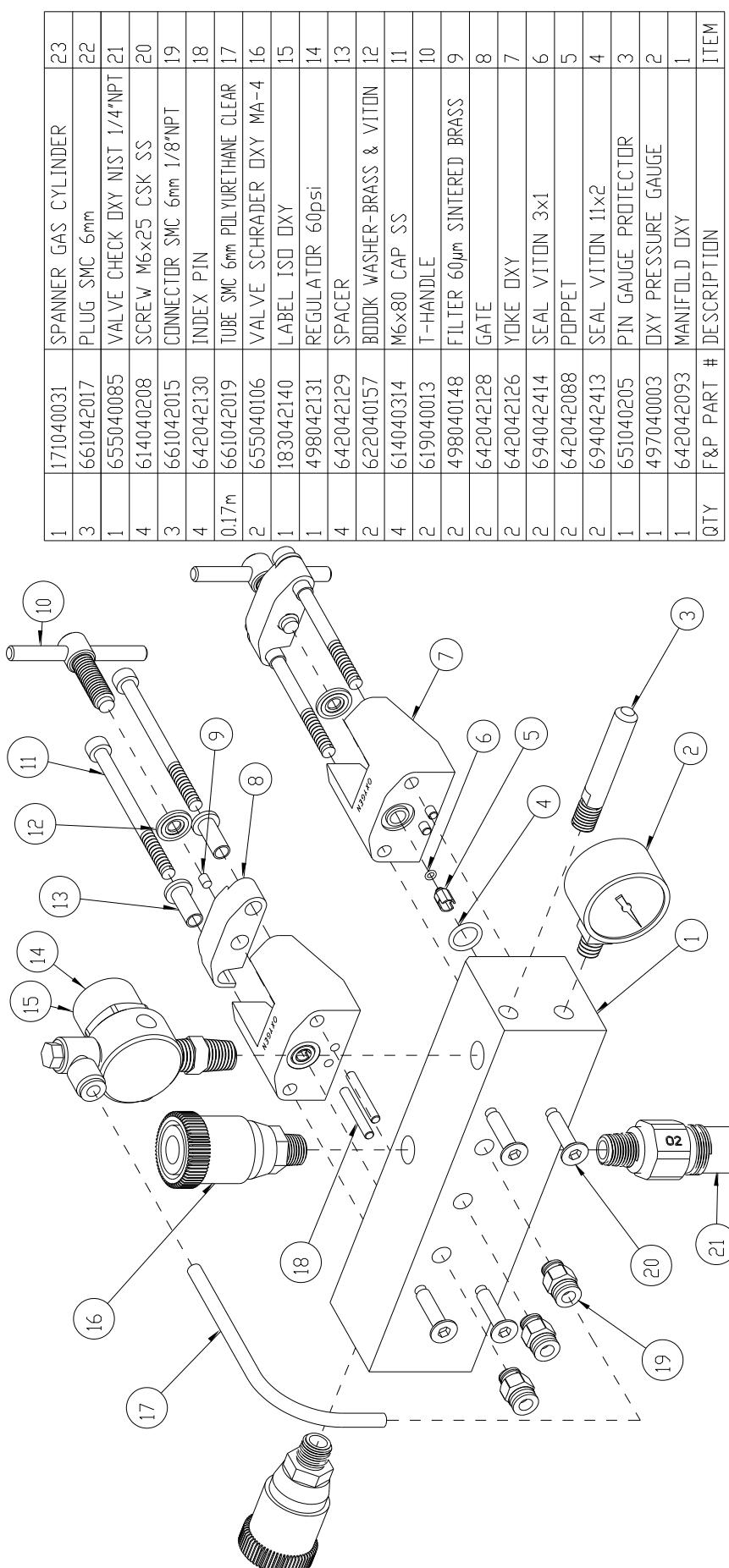


10.4 900IW101/103/105 OXYGEN GAS SUPPLY MODULES

10.4.1 900IW101/103/105 OXYGEN GAS SUPPLY MODULE VER. 3 ASSEMBLY DIAGRAM (MANUFACTURED PRIOR TO JAN 2009)

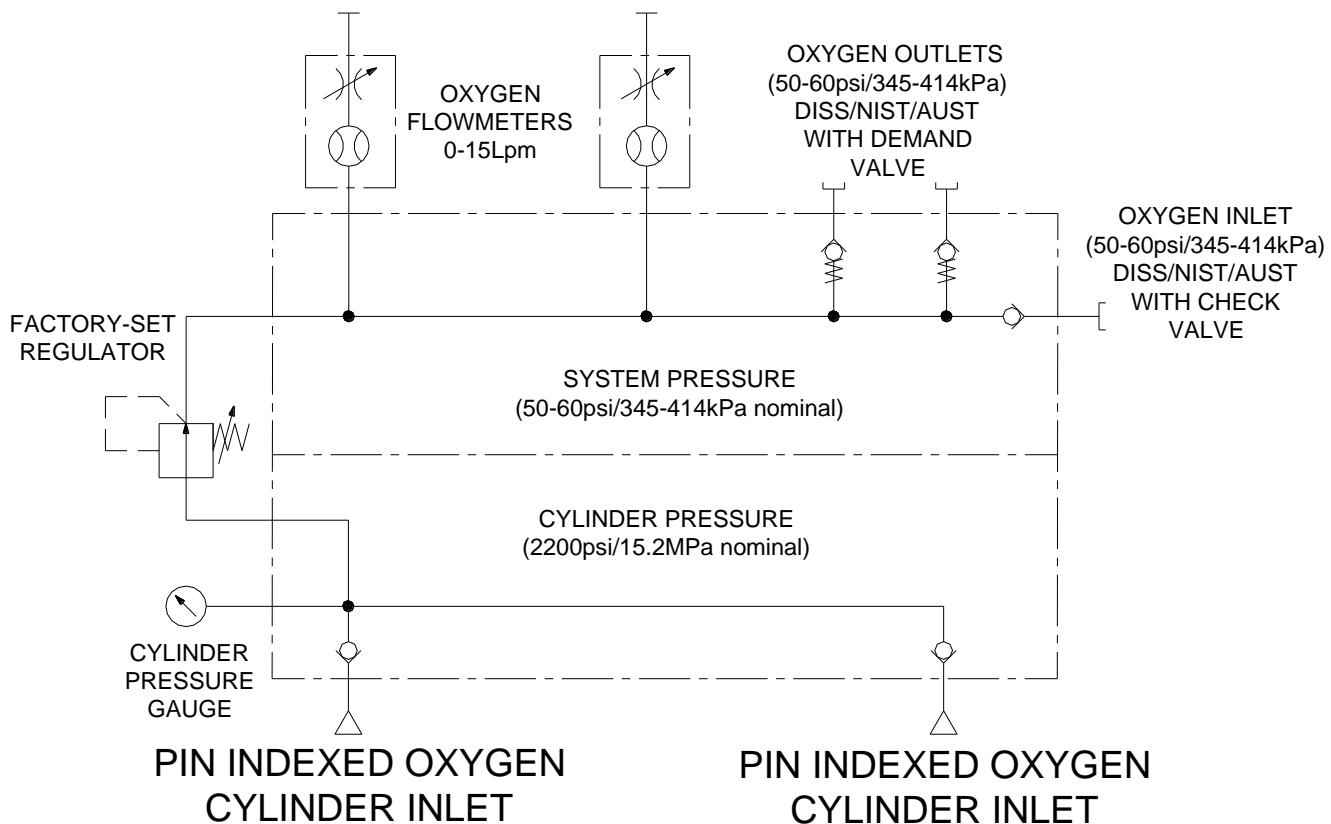


10.4.2 900IW103 OXYGEN GAS SUPPLY MODULE ASSEMBLY DIAGRAM (MANUFACTURED AFTER JAN 2009)



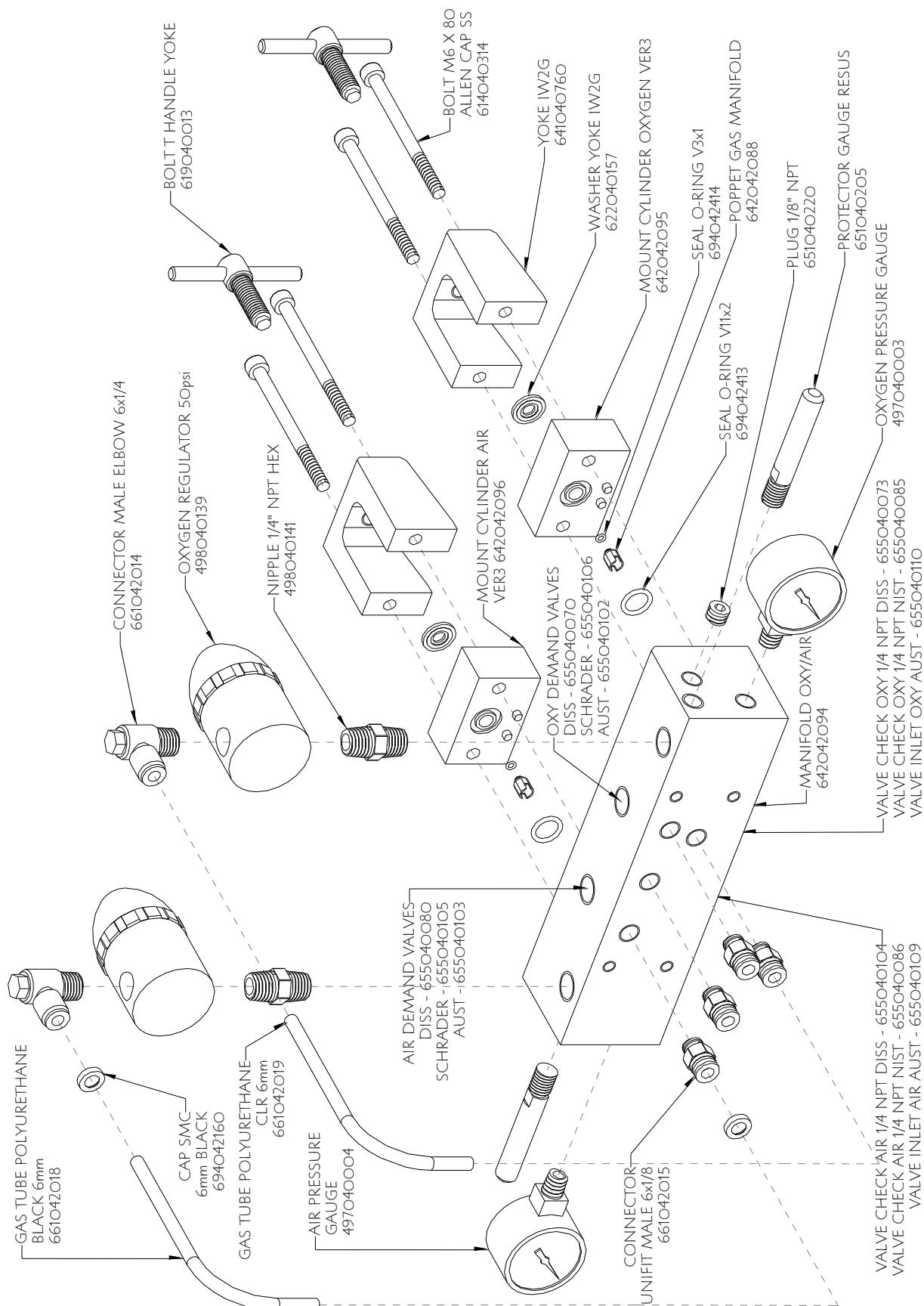
10.4.3 900IW101/103/105 OXYGEN GAS SUPPLY MODULE CIRCUIT DIAGRAM

Connected to a 900IW110/112 Oxygen Flowmeter Module



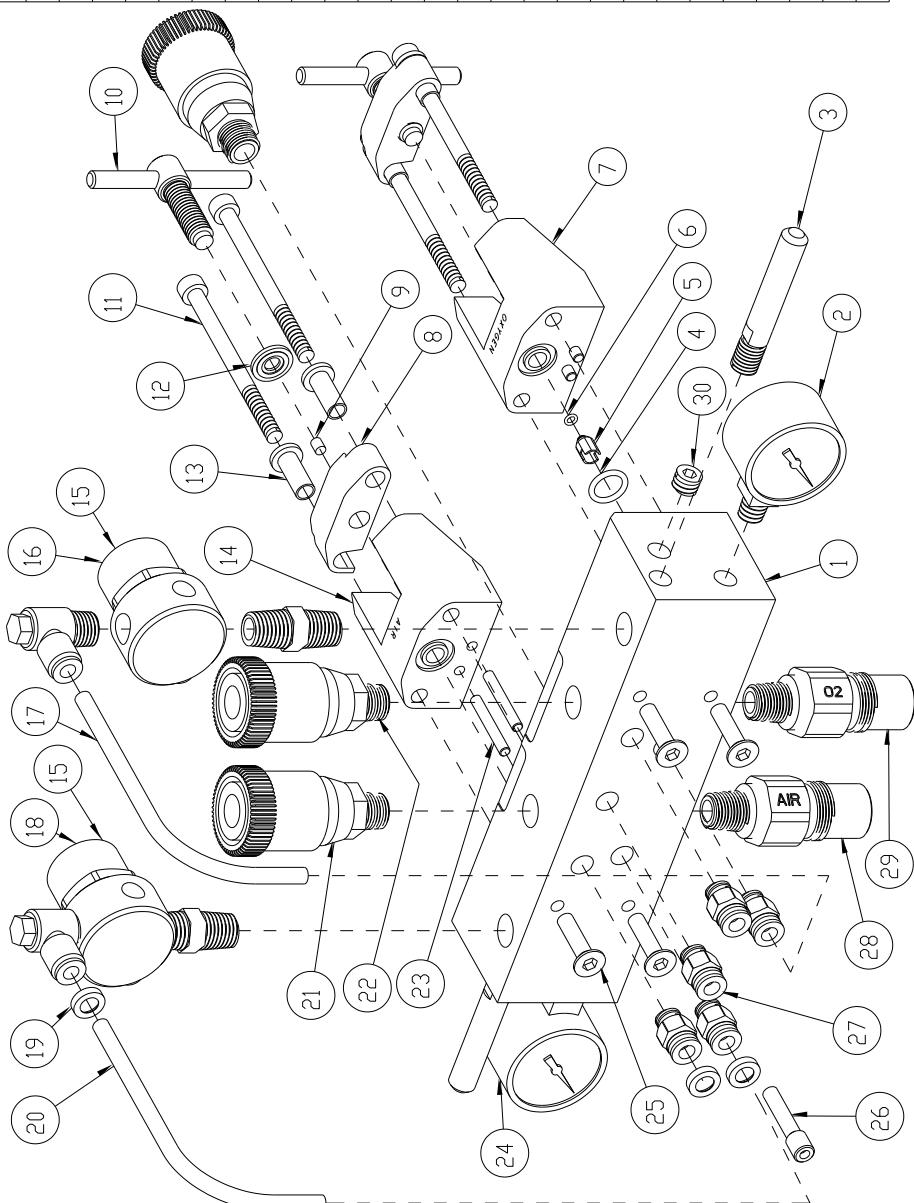
10.5 900IW102/104/106 OXYGEN/AIR GAS SUPPLY MODULES

10.5.1 900IW102/104/106 OXYGEN AIR GAS SUPPLY MODULE VER. 3 ASSEMBLY DIAGRAM (MANUFACTURED PRIOR TO JAN 2009)

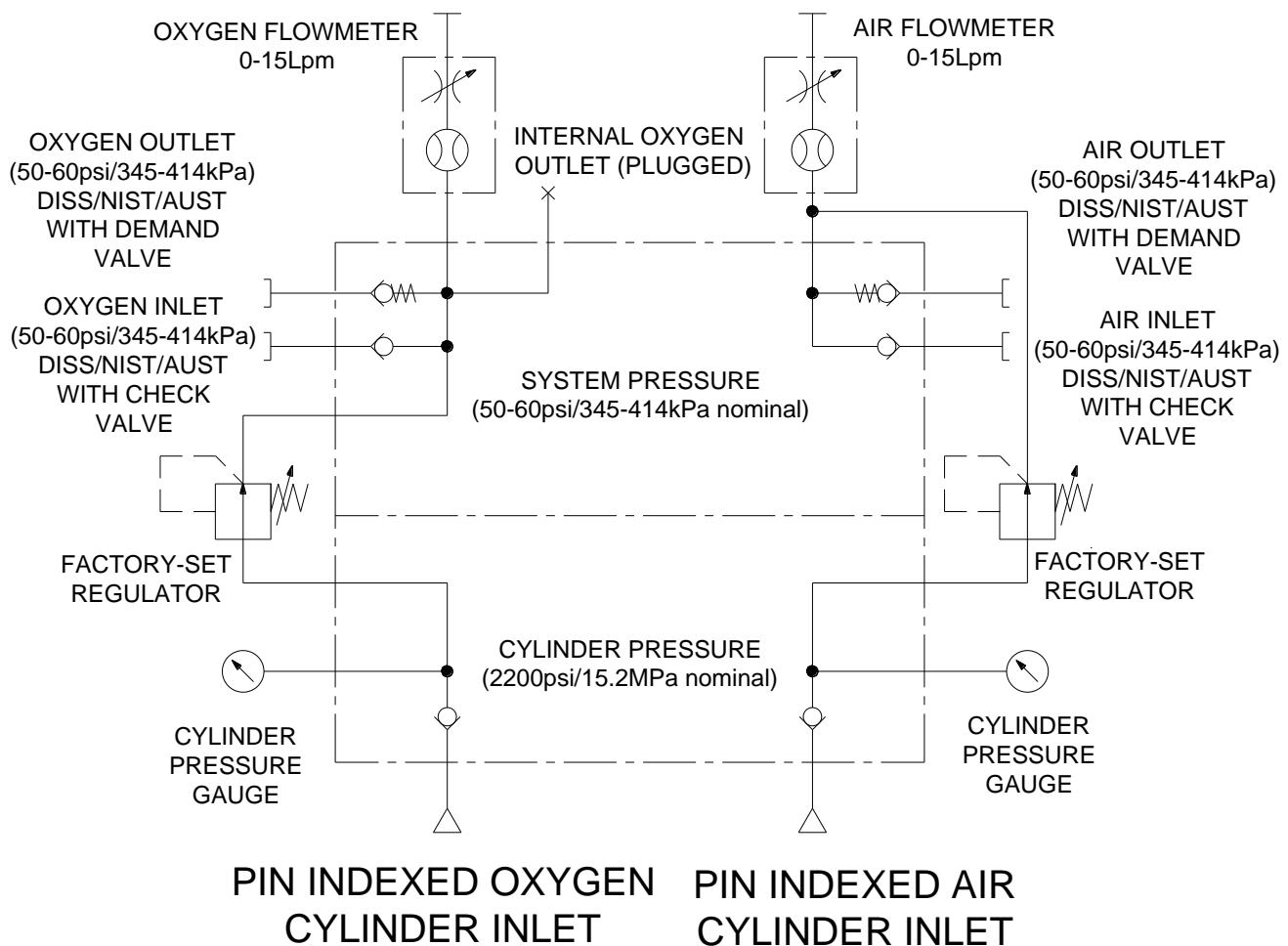


10.5.2 900IW104 OXYGEN AIR GAS SUPPLY MODULE ASSEMBLY DIAGRAM (MANUFACTURED AFTER JAN 2009)

ITEM	F&P PART #	DESCRIPTION	QTY
1	171040031	SPANNER GAS CYLINDER	31
1	651040220	PLUG 1/8" NPT	30
1	655040085	VALVE CHECK NIST OXY 1/4"NPT	29
1	655040086	VALVE CHECK NIST AIR 1/4"NPT	28
5	661042015	CONNECTOR SMC 6mm 1/8"UNI	27
3	661042017	PLUG SMC 6mm	26
4	614040208	SCREW M6x25 CSK SS	25
1	497040004	AIR PRESSURE GAUGE	24
4	642042130	INDEX PIN	23
2	655040106	VALVE SCHRAEDER OXY MA-4	22
1	655040105	VALVE SCHRAEDER AIR	21
0.17m	661042018	TUBE SMC POLYURETHANE 6mm BLACK	20
3	694042160	CAP SMC BLACK	19
1	183042141	LABEL ISO AIR	18
0.17m	661042019	TUBE SMC 6mm POLYURETHANE CLEAR	17
1	183042140	LABEL ISO OXY	16
2	498042131	REGULATOR 60psi	15
1	642042127	YOKE AIR	14
4	642042129	SPACER	13
2	622040157	BODOK WASHER-BRASS & VITON	12
4	614040314	M6x80 CAP SS	11
2	619040013	T-HANDLE	10
2	498040148	FILTER 60μm SINTERED BRASS	9
2	642042128	GATE	8
1	642042126	YOKE OXY	7
2	694042414	SEAL VITON 3x1	6
2	642042088	POPET	5
2	694042413	SEAL VITON 11x2	4
2	651040205	PIN GAUGE PROTECTOR	3
1	497040003	OXY PRESSURE GAUGE	2
1	642042094	MANIFOLD OXY/AIR	1
QTY	F&P PART #	DESCRIPTION	ITEM

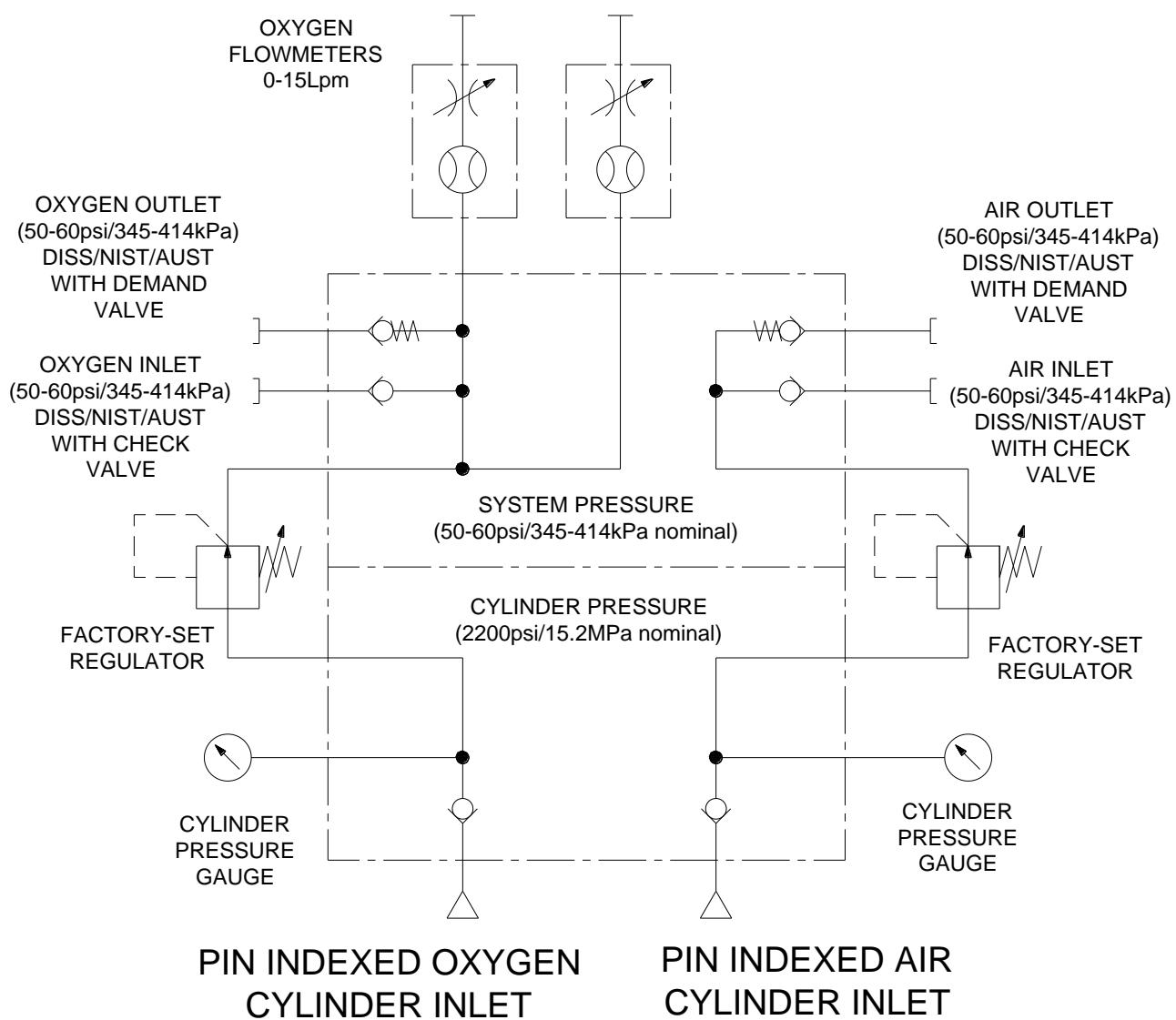


10.5.3 CIRCUIT DIAGRAM - 900IW102/4/6 MODULE CONNECTED TO 900IW111/113 FLOWMETER MODULE



PIN INDEXED OXYGEN CYLINDER INLET PIN INDEXED AIR CYLINDER INLET

10.5.4 CIRCUIT DIAGRAM - 900IW102/4/6 MODULE CONNECTED TO 900IW110/112 OXY FLOWMETER MODULE



Intentionally Blank

10.6 900IW110/111/112/113 FLOWMETER MODULES

- The 900IW110/112 OXYGEN FLOWMETER MODULE contains two 0-15lpm flowmeters, which are connected internally to a GAS SUPPLY MODULE or GAS LOW PRESSURE MODULE. This module can be fitted to all such modules regardless of gas fitting style or gas type.
- The 900IW111/113 OXYGEN/AIR FLOWMETER MODULE contains one oxygen and one air flowmeter. This module can only be fitted to the following OXYGEN/AIR modules (900IW102/104/106, 900IW162/164/166/168).

10.6.1 AMVEX FLOWMETERS

Amvex 0-15 Lpm flowmeters have special orifices that restrict the maximum flow through the flowmeter to 19 ± 3 Lpm.

A flowmeter repair kit is available from Amvex under the following part number:

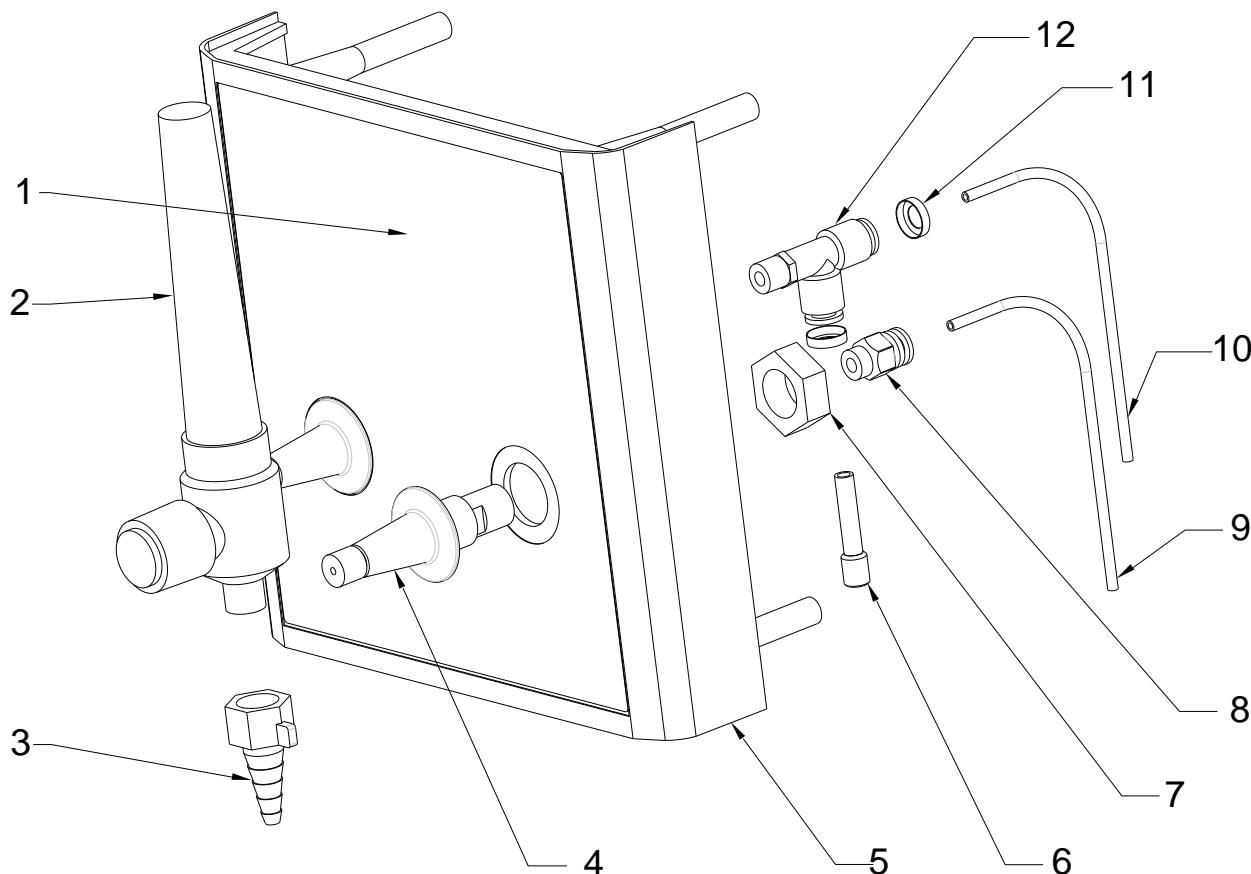
- FM-KIT Flowmeter Repair Kit

For further information relating to these flowmeters refer to the Amvex User Manual included with the product.

Amvex Corporation contact details:

Amvex Corporation
25B East Pearce Street
Richmond Hill, ON
L4B 2M9, Canada
Tel: +1 905 764 7736

900IW11X Flowmeter Modules Assembly Diagram



Item	Part Number	Description
1	233201627 233201628	Panel Fascia Oxygen Blue Panel Fascia Oxygen/Air Blue
2	498042120 498042121 498042118 498042119	Flowmeter 0-15Lpm 60psi OXY WHITE Flowmeter 0-15Lpm 60psi AIR BLACK Flowmeter 0-15Lpm 50psi OXY GREEN Flowmeter 0-15Lpm 50psi AIR YELLOW
3	498040128 498040178 498040150 498040177	Nipple Flowmeter OXY WHITE Nipple Flowmeter AIR BLACK Nipple Flowmeter OXY GREEN Nipple Flowmeter AIR YELLOW
4	641040761	Mount Flowmeter
5	693040709	Accessory Panel
6	661042017	Plug SMC 6mm
7	621040545	Nut M16
8	661042015	Connector Male Unifit 6x1/8"
9	661042019	Gas Tubing Polyurethane CLEAR 6mm
10	661042018	Gas Tube Polyurethane BLACK 6mm
11	694042160	Cap SMC 6mm BLACK
12	661042016	Connector Run Tee 6mm

Intentionally Blank

10.7 900IW115/116/117/117G/118/118Y SINGLE FLOWMETERS

- The following single flowmeters are available:

900IW115	OXY AUST	900IW116	AIR AUST
900IW117	OXY DISS	900IW118	AIR DISS
900IW117G	OXY DISS Green	900IW118Y	AIR DISS Yellow

10.7.1 AMVEX FLOWMETERS

Amvex 0-15 Lpm flowmeters have special orifices that restrict the maximum flow through the flowmeter to 19 ±3 Lpm.

A flowmeter repair kit is available from Amvex under the following part number:

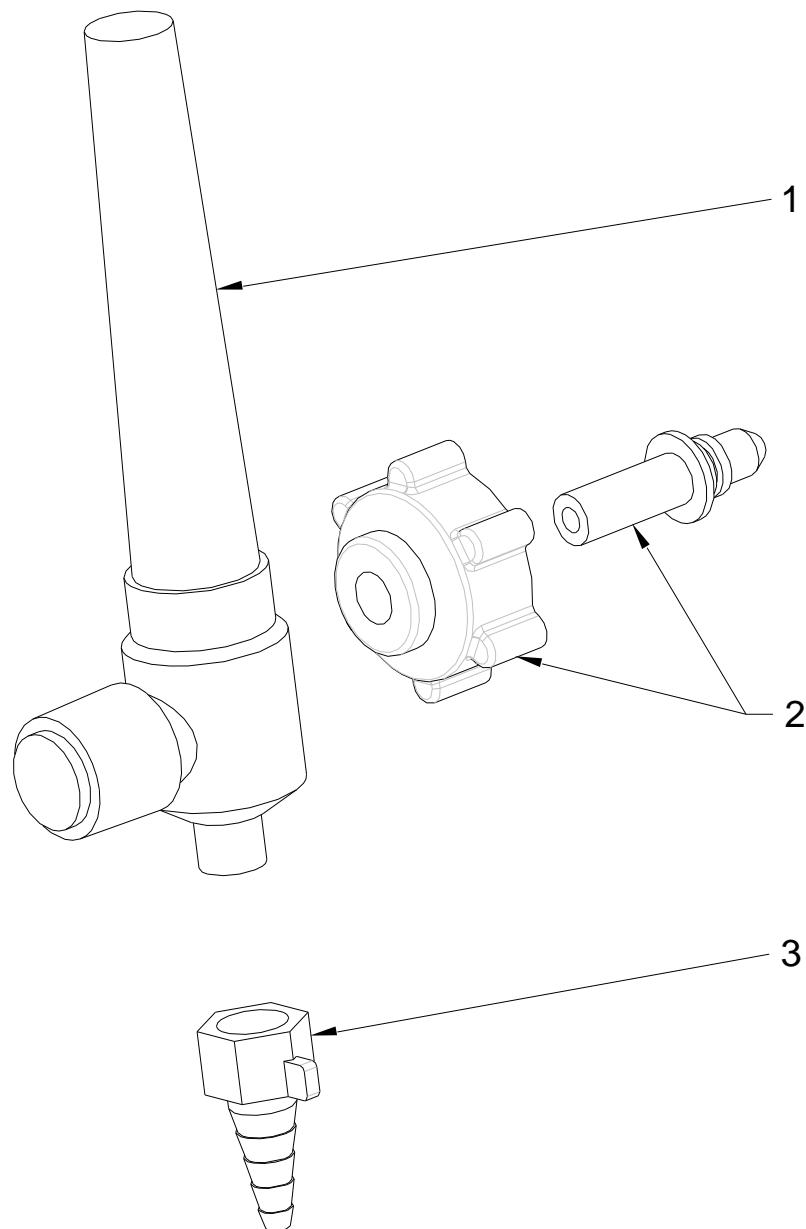
- FM-KIT Flowmeter Repair Kit

For further information relating to these flowmeters refer to the Amvex User Manual included with the product.

Amvex Corporation contact details:

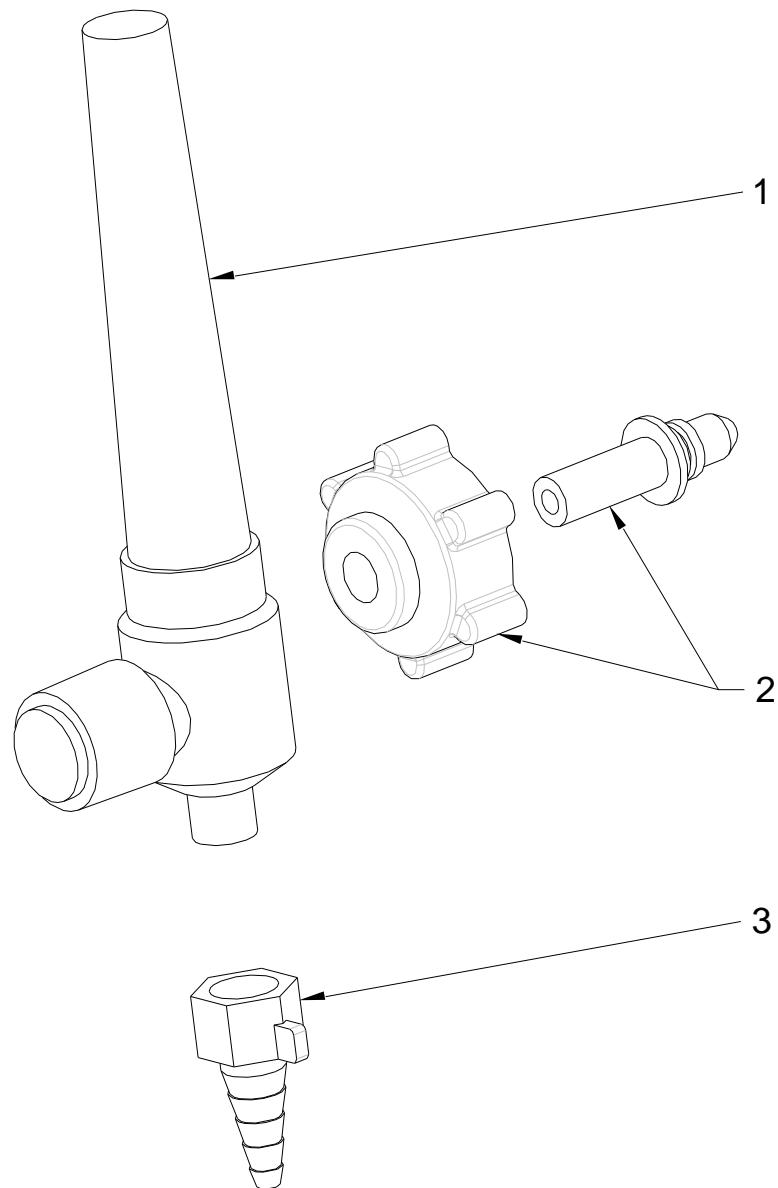
Amvex Corporation
25B East Pearce Street
Richmond Hill, ON
L4B 2M9, Canada
Tel: +1 905 764 7736

10.7.2 900IW115/117/117G OXYGEN SINGLE FLOWMETER ASSEMBLY DIAGRAM



Item	Part Number	Description
1	498042120	Flowmeter 0-15Lpm 60psi OXY WHITE
	498042118	Flowmeter 0-15Lpm 50psi OXY GREEN
2	043041054	DISS Flowmeter Handwheel OXY WHITE
	498042154	DISS Flowmeter Handwheel OXY GREEN
3	498040124	AUST Flowmeter handwheel OXY
	498040128	Nipple Flowmeter OXY WHITE
	498040150	Nipple Flowmeter OXY GREEN

10.7.3 900IW116/118/118Y AIR SINGLE FLOWMETER ASSEMBLY DIAGRAM

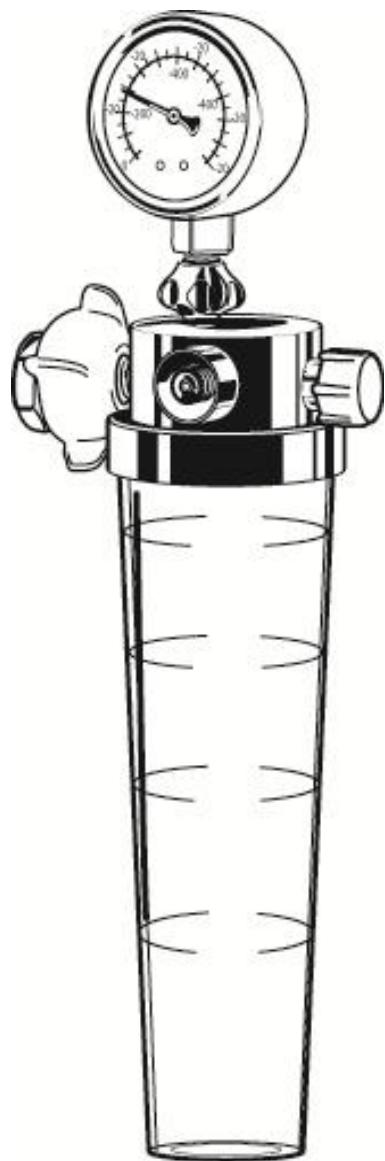


Item	Part Number	Description
1	498042121 498042119	Flowmeter 0-15Lpm 60psi AIR BLACK Flowmeter 0-15Lpm 50psi AIR YELLOW
2	043041055 498042155 043041053	DISS Flowmeter Handwheel AIR BLACK DISS Flowmeter Handwheel AIR YELLOW AUST Flowmeter handwheel AIR
3	498040178 498040177	Nipple Flowmeter AIR BLACK Nipple Flowmeter AIR YELLOW

10.8 900IW121/123 VENTURI SUCTION UNITS

- The following Venturi suction units are available:

900IW121 AUST
900IW123 DISS



NOTE: The receiver jar (400 ml) is available as part no. 999890043.

The receiver jar (200 ml) is available as part no. 999890034.

The bacteria filter is available in a pack of 25, as part no. 043042144.

10.9 900IW130X NEOPUFF™ MODULE

For Neopuff™ Infant Resuscitator refer to 185041597 Infant Resuscitator Technical Manual

10.10 900IW15X GAS ACCESSORY BLOCKS

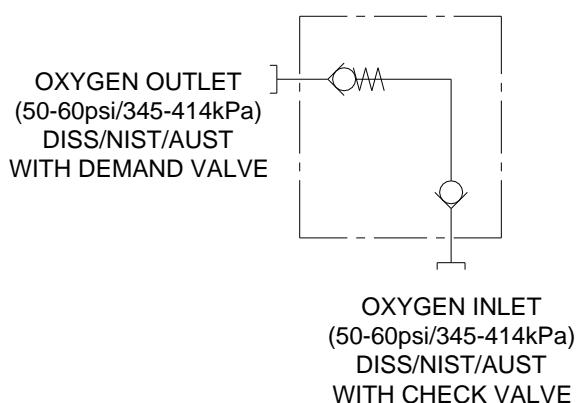
These are used for mounting single flowmeters (900IW115 - 900IW118), Venturi Suction units and Blenders. They can be connected to a GAS SUPPLY MODULE or LOW PRESSURE GAS MODULE by way of a short (550mm) hose or connected to a hospital wall supply with a long (3m) hose. There are both oxygen and air blocks for all three gas-fitting styles. The part numbers are as follows:

900IW151	OXYGEN DISS	900IW152	AIR DISS
900IW153	OXYGEN NIST	900IW154	AIR NIST
900IW155	OXYGEN AUST	900IW156	AIR AUST
900IW153K	OXYGEN UK	900IW154K	AIR UK

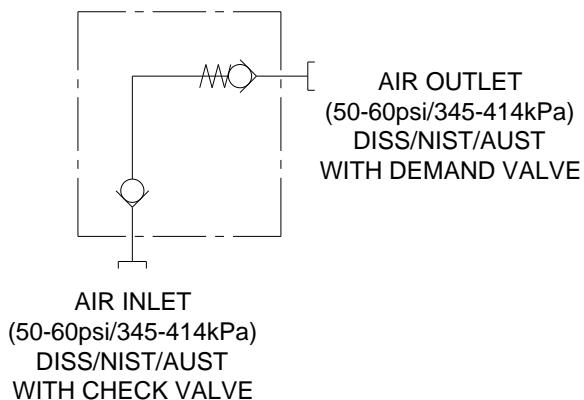
NOTE: The 900IW153K and 900IW154K block are configured specifically for Fisher & Paykel Healthcare (UK) to enable an OxyLitre Venturi suction module to be fitted.

10.10.1 900IW15X GAS ACCESSORY BLOCK CIRCUIT DIAGRAMS

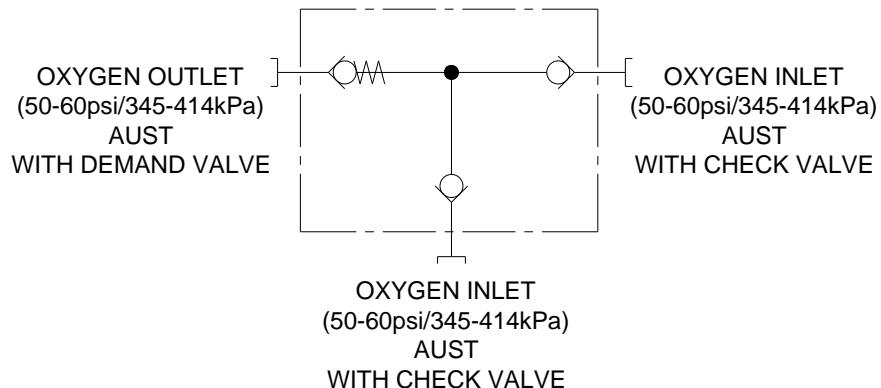
900IW151/153 Oxygen Gas Accessory Blocks



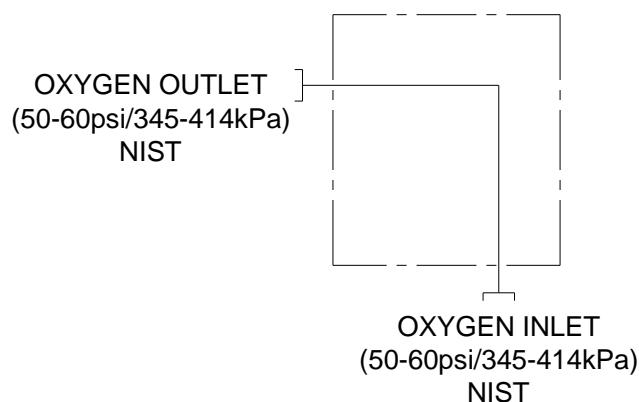
900IW152/154/156 Air Gas Accessory Blocks



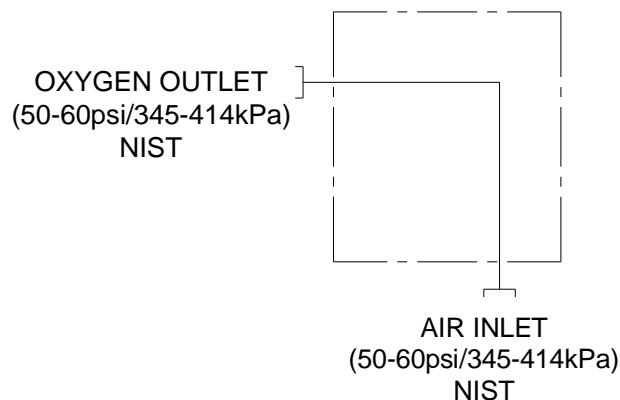
900IW155 Oxygen Gas Accessory Block AUST



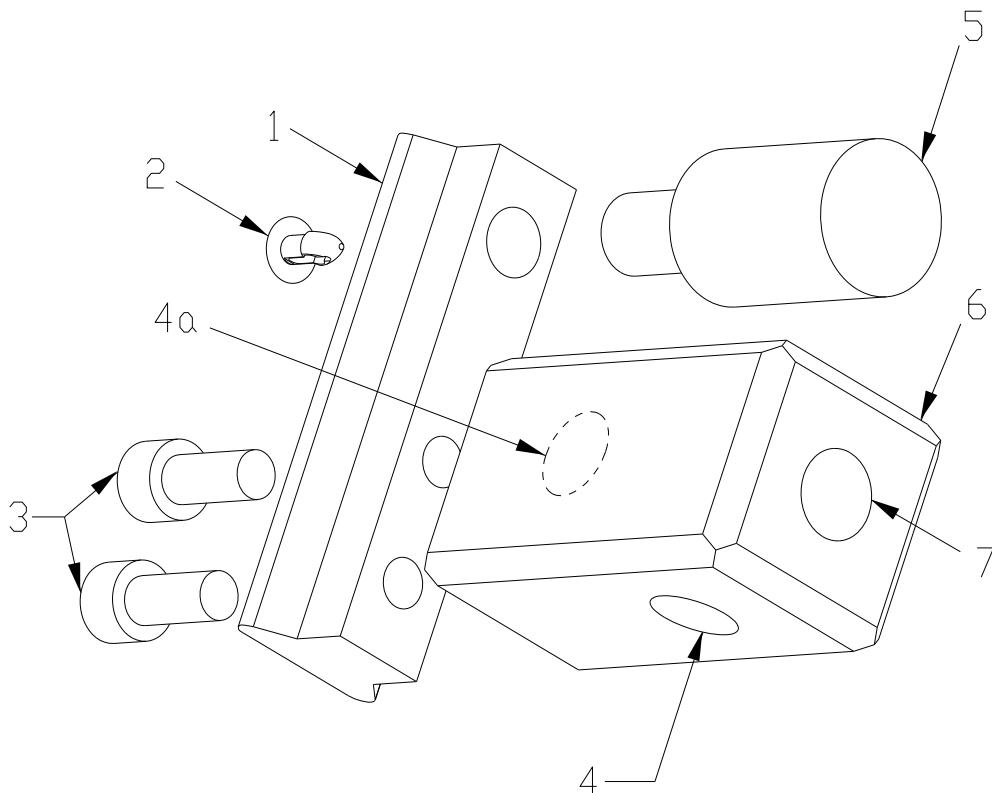
900IW153K Oxygen Gas Accessory Block UK



900IW154K Air Gas Accessory Block UK



10.10.2 900IW15X GAS ACCESSORY BLOCK ASSEMBLY DIAGRAM



10.10.3 900IW15X GAS ACCESSORY BLOCK PARTS LIST

Item	Part Number	Description	Model (if applicable)
1	655040094	Block Support Gas	All
2	336060132	Plug Hole Nylon	All
3	614040168	Screw M6 x 20 CAP SS	All
4	<i>Gas Inlet - model dependant</i>		
	655040073	DISS OXY	900IW151
	655040104	DISS AIR	900IW152
	655040085	NIST OXY	900IW153
	655040440	NIST OXY	900IW153K
	655040086	NIST AIR	900IW154
	655040086	NIST AIR	900IW154K
	655040110	AUST OXY	900IW155
	655040109	AUST AIR	900IW156
4a	655040110	AUST OXY (Additional Inlet Fitting)	900IW155
	655040112	NIST OXY	900IW153K
	655040112	NIST OXY	900IW154K
5	651040204	Knob Screw M10	All
6	<i>Gas Block - model dependant</i>		
	642042109	Block Gas Accessory AUST	900IW155
	642042110	Block Gas Accessory UK	900IW153K, 900IW154K
	655040091	Block Gas Accessory	All other models
7	<i>Gas Outlet - model dependant</i>		
	655040070	DISS OXY	900IW151
	655040080	DISS AIR	900IW152
	655040106	SCHRADER OXY	900IW153
	655040105	SCHRADER AIR	900IW154
	655040102	AUST OXY	900IW155
	655040103	AUST AIR	900IW156

10.11 900IW16X LOW PRESSURE GAS MODULES

10.11.1 900IW16X LOW PRESSURE GAS MODULES INFORMATION

These are used for mounting single flowmeters, suction units and blenders. They can be connected internally to an OXYGEN FLOWMETER MODULE or OXYGEN/AIR FLOWMETER MODULE and connected to a hospital wall supply with a long (3m) hose or to cylinders via a short hose and with the use of a Dual Cylinder Rack (900IW310). If no Flowmeter Module is ordered the SMC™ fittings can be sealed off with the supplied plugs (661042017). The part numbers are as follows:

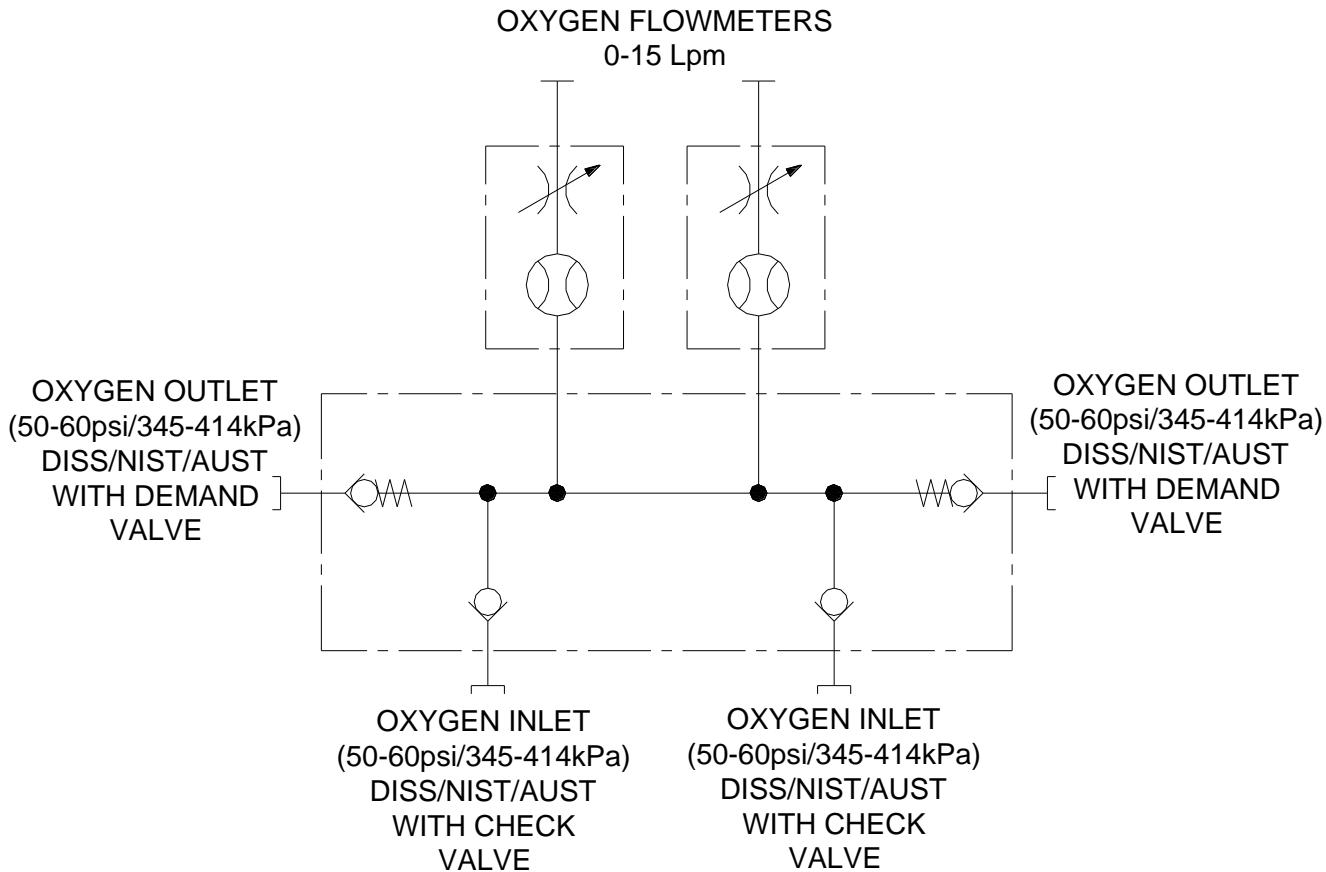
900IW161	OXYGEN DISS	900IW162	OXY/AIR DISS
900IW163	OXYGEN NIST/SCHRADER	900IW164	OXY/AIR NIST/SCHRADER
900IW165	OXYGEN Australia (SIS)	900IW166	OXY/AIR Australia (SIS)

900IW168 OXY/AIR French (AFNOR)

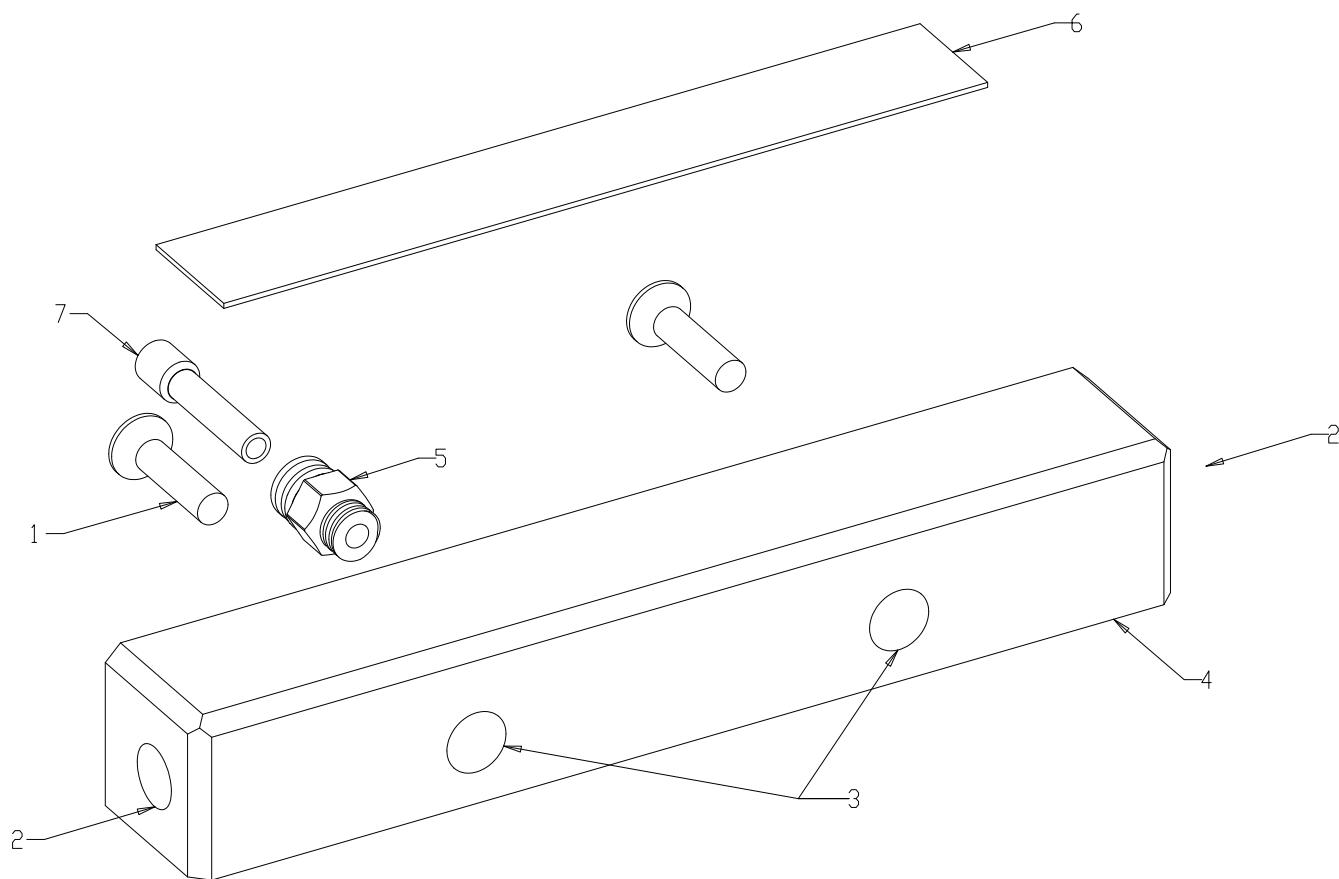
- The low-pressure gas modules can be installed in two positions depending on the gas cylinder height of each country. The higher position in the column (directly behind the highest accessory panel) is provided for cylinders greater than 600mm in height (excluding the valve) and is particularly suited to the US market.

10.11.2 900IW161/3/5 OXYGEN LOW PRESSURE GAS MODULES CIRCUIT DIAGRAM

Connected to a 900IW110/112 Oxygen Flowmeter Module



10.11.3 900IW161/3/5 OXYGEN LOW PRESSURE GAS MODULES ASSEMBLY DIAGRAM

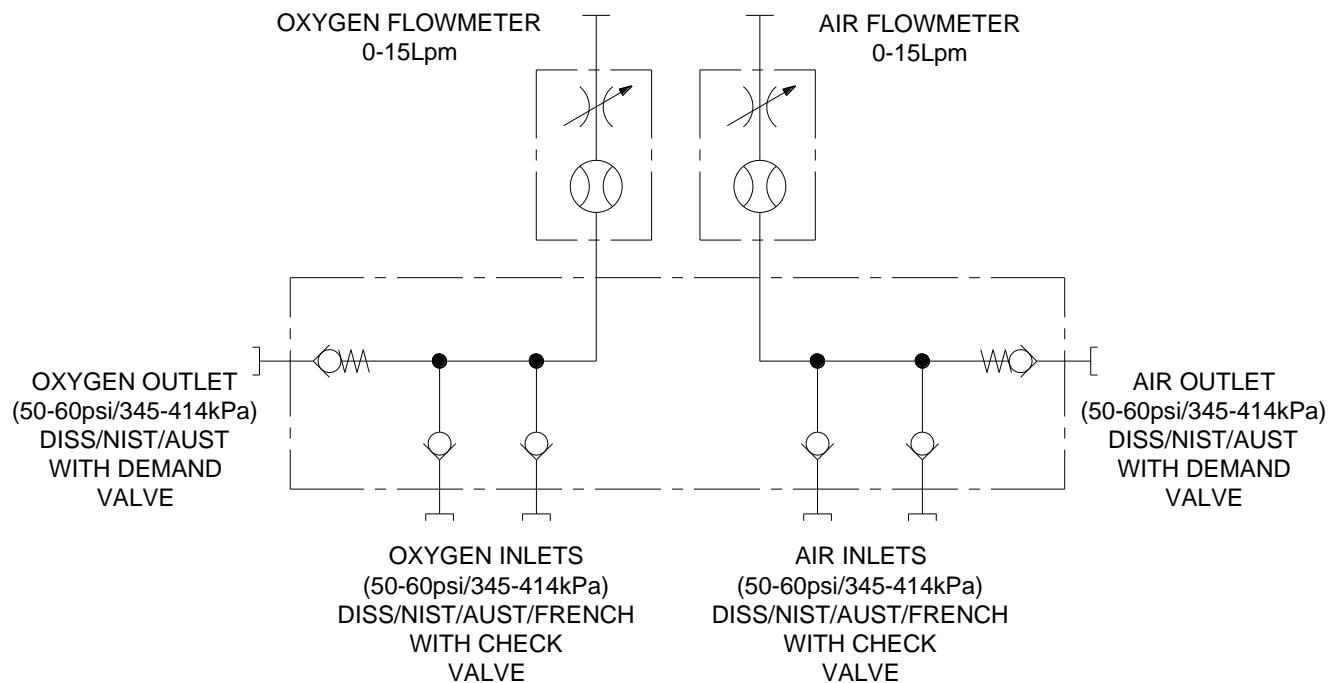


10.11.4 900IW161/163/165 OXYGEN LOW PRESSURE GAS MODULE PARTS LIST

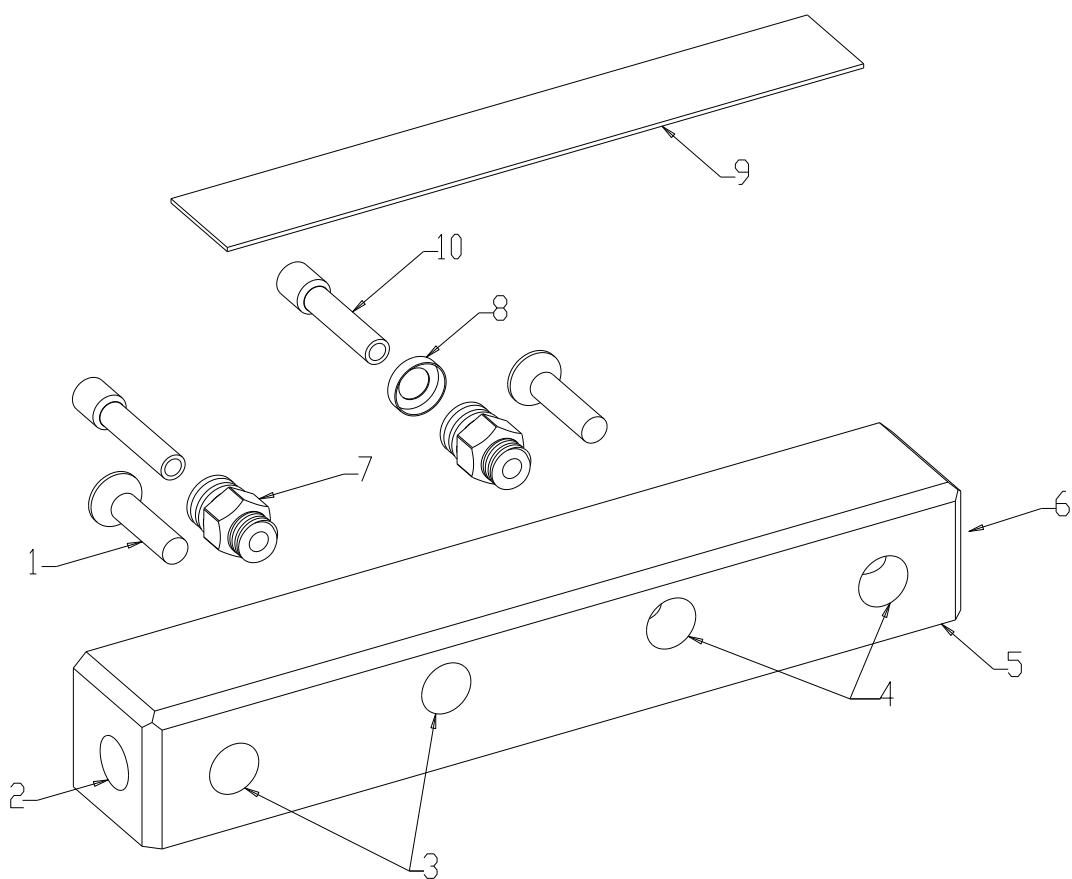
Item	Part Number	Description	Model (if applicable)
1	614040208	Screw M6 x25 CSK Allen	All
2	Oxygen Outlet - model dependant 655040070 655040106 655040102	DISS OXY SCHRADER OXY AUST OXY	900IW161 900IW163 900IW165
3	Oxygen Inlet - model dependant 655040073 655040085 655040110	DISS OXY NIST OXY AUST OXY	900IW161 900IW163 900IW165
4	651040229	Manifold Low Pressure OXY	All
5	661042015	Connector Unifit Male 6mm x1/8"	All
6	183042048	Label	All
7	661042017	Plug SMC Connector 6mm	All

10.11.5 900IW162/4/6/8 OXYGEN/AIR LOW PRESSURE GAS MODULES CIRCUIT DIAGRAM

Connected to a 900IW111/113 Oxygen/Air Flowmeter Module



10.11.6 900IW162/4/6/8 OXYGEN/AIR LOW PRESSURE GAS MODULES ASSEMBLY DIAGRAM



10.11.7 900IW162/164/166/168 OXYGEN/AIR LOW PRESSURE GAS MODULE PARTS LIST

Item	Part Number	Description	Model (if applicable)
1	614040208	Screw M6 x25 CSK Allen	All
2	Oxygen Outlet - model dependant		
	655040070	DISS OXY	900IW162
	655040106	SCHRADER OXY	900IW164
	655040102	AUST OXY	900IW166
	655040070	DISS OXY	900IW168
3	Oxygen Inlet - model dependant		
	655040073	DISS OXY	900IW162
	655040085	NIST OXY	900IW164
	655040110	AUST OXY	900IW166
	655040116	AFNOR OXY	900IW168
4	Air Inlet - model dependant		
	655040104	DISS AIR	900IW162
	655040086	NIST AIR	900IW164
	655040109	AUST AIR	900IW166
	655040117	AFNOR AIR	900IW168
5	651040228	Manifold Low Pressure OXY/AIR	All
6	Air Outlet - model dependant		
	655040080	DISS AIR	900IW162
	655040105	SCHRADER AIR	900IW164
	655040103	AUST AIR	900IW166
	655040080	DISS AIR	900IW168
7	661042015	Connector Unifit Male 6mm x1/8"	All
8	694042160	Cap SMC 6mm Black	All
9	183042049	Label	All
10	661042017	Plug SMC Connector 6mm	All

10.12 900IW171 OXYGEN REGULATOR

10.12.1 900IW171 OXYGEN REGULATOR INFORMATION

This is used for supplying a GAS ACCESSORY BLOCK or a GAS LOW PRESSURE MODULE with 50psi oxygen. It is used in conjunction with a short hose (550mm), medical oxygen cylinder and Cylinder Rack (900IW310/311).

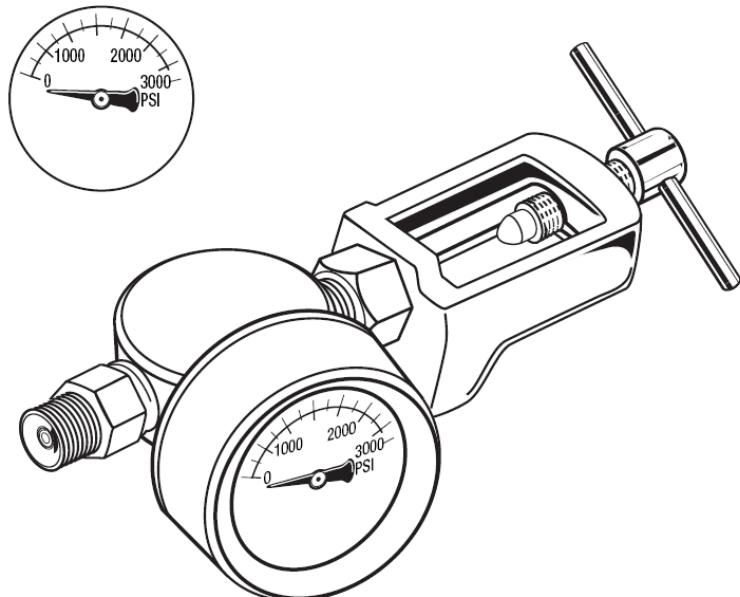
Currently only the 900IW171 OXY DISS is available.

This regulator is produced by Amvex Corporation, for further information refer to the Amvex User Manual included with the product or contact Amvex.

Amvex Corporation contact details:

Amvex Corporation
25B East Pearce Street
Richmond Hill, ON
L4B 2M9, Canada
Tel: +1 905 764 7736

10.12.2 900IW171 OXYGEN REGULATOR ASSEMBLY 498040151



10.13 900IW172 AIR REGULATOR

10.13.1 900IW172 AIR REGULATOR INFORMATION

This is used for supplying a GAS ACCESSORY BLOCK or a GAS LOW PRESSURE MODULE with 50psi air. It is used in conjunction with a short hose (550mm), medical air cylinder and Cylinder Rack (900IW310/311).

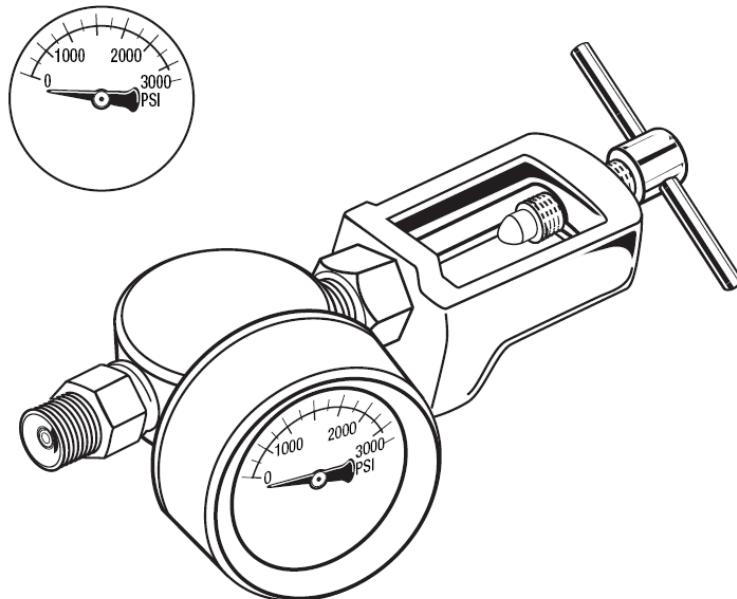
Currently only the 900IW172 AIR DISS is available.

This regulator is produced by Amvex Corporation, for further information refer to the Amvex User Manual included with the product or contact Amvex.

Amvex Corporation contact details:

Amvex Corporation
25B East Pearce Street
Richmond Hill, ON
L4B 2M9, Canada
Tel: +1 905 764 7736

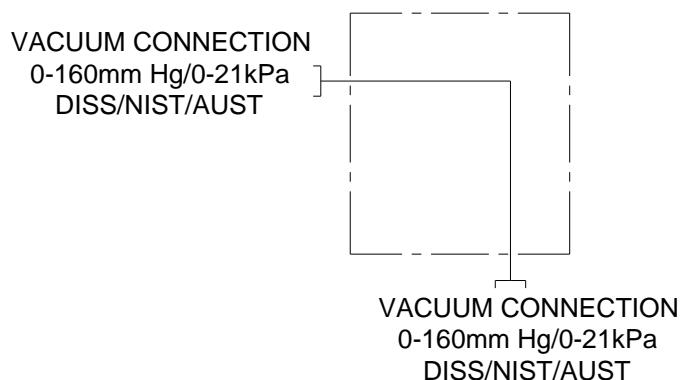
10.13.2 900IW172 AIR REGULATOR ASSEMBLY 498042134



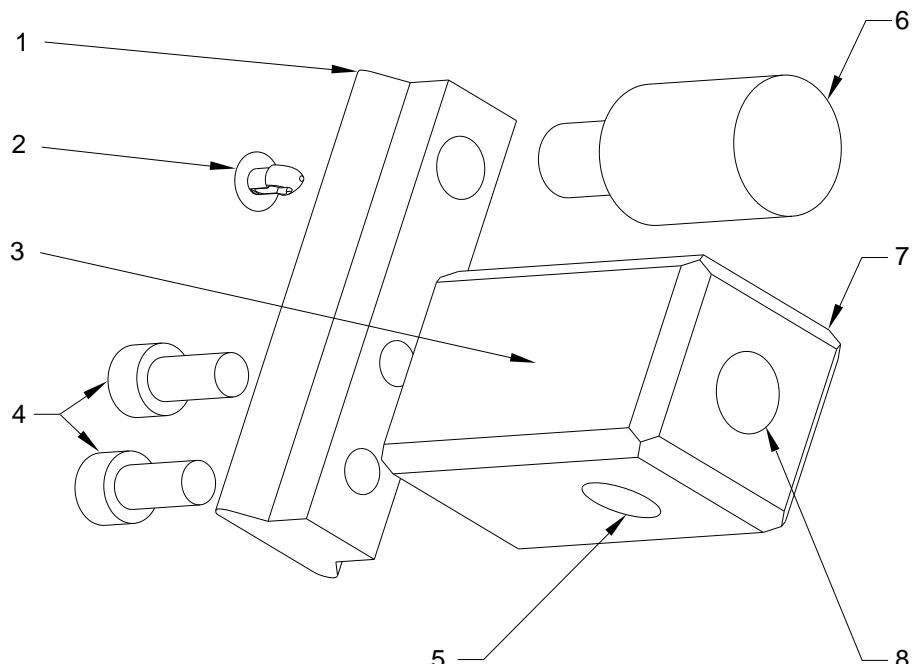
10.14 900IW181/182/183 SUCTION BLOCK

The suction block allows suction units to be moved from the wall suction outlets and mounted onto the side of a CosyCot™ Infant Radiant Warmer.

10.14.1 900IW18X SUCTION BLOCK CIRCUIT DIAGRAM



10.14.2 SUCTION BLOCK ASSEMBLY DIAGRAM



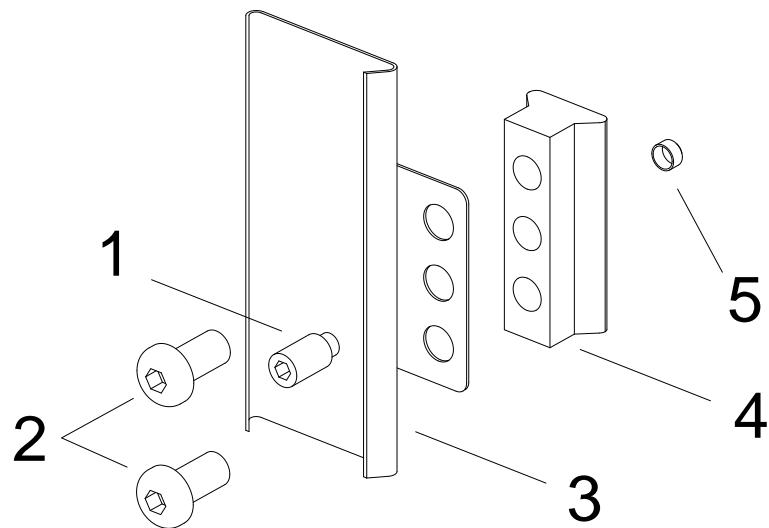
10.14.3 900IW18X SUCTION BLOCK PARTS LIST

Item	Part Number	Description	Model (if applicable)
1	655040094	Block Support Suction Bottle	
2	336060132	Plug Hole Nylon	
3	183041962	Label Suction	
4	614040168	Screw M6 x 20 CAP SS	
5	Model dependant Suction Supply Fitting		
	655040114	DISS Suction	900IW181
	655040118	NIST Suction	900IW182
	655040119	AUST Suction	900IW183
6	651040204	Knob Screw M10	
7	655040091	Block Gas Accessory	
8	Model dependant Device Connection Fitting		
	655040115	DISS Suction	900IW181
	655040118	NIST Suction	900IW182
	655040119	AUST Suction	900IW183

10.15 900IW309 SUCTION CANISTER MOUNTING BLOCK

The 900IW309 Suction Canister Mounting block is designed to hold standard Abbot and Baxter suction canisters.

900IW309 SUCTION CANNISTER MOUNTING BLOCK ASSEMBLY DIAGRAM



900IW309 SUCTION CANNISTER MOUNTING BLOCK ASSEMBLY PARTS LIST

Item	Part Number	Description
1	614040326	Screw M8 x 16 Grub Hex Dog Pnt
2	614040325	Screw M8 x 16 Allen Button Head SS
3	648040151	Bracket Assy Suction Canister Mtg
4	655040088	Block Support 50mm IW2G
5	693041419	Cap Grub Screw

10.16 900IW310 DUAL CYLINDER RACK

WARNING



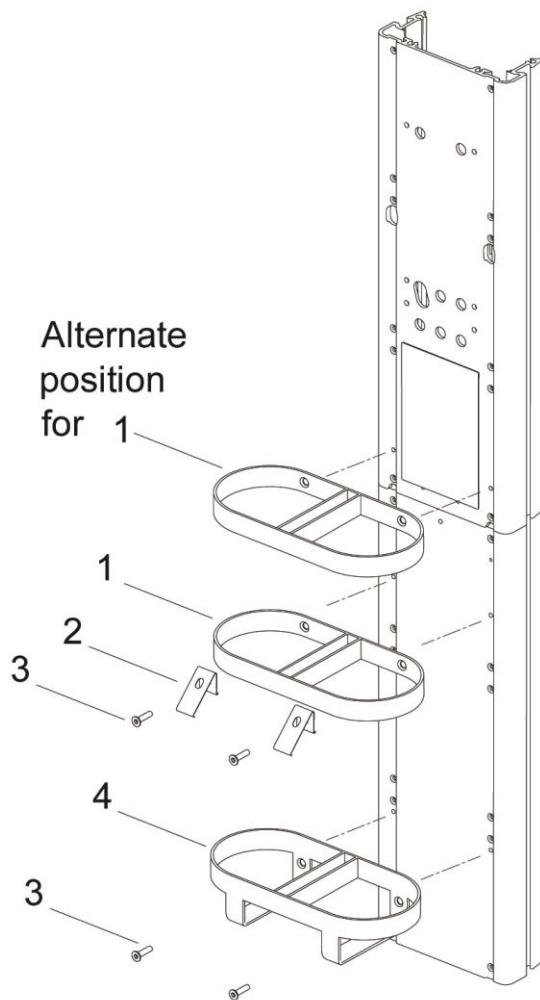
Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.

The 900IW310 Dual Cylinder Rack is designed to hold two gas cylinders up to 117mm (4.6") diameter. For cylinders taller than 600mm (24"), excluding the valve, the upper bracket (1) can be positioned higher on the column to provide additional support.

NOTE: This normally occurs in conjunction with positioning a 900IW16X low-pressure module on the upper mounting holes and is particularly suited to cylinders in the US market.

The gas bottle retainer spring can be optionally fitted to give additional support to narrow gas bottles.

900IW310 DUAL CYLINDER RACK ASSEMBLY DIAGRAM



900IW310 DUAL CYLINDER RACK ASSEMBLY PARTS LIST

Item	Part Number	Description
1	642042200	Bracket Cylinder Upper
2	661042020	Spring Gas Bottle Retainer
3	614040208	Screw M6 x 25 CSK Allen SS
4	642042201	Bracket Cylinder Lower

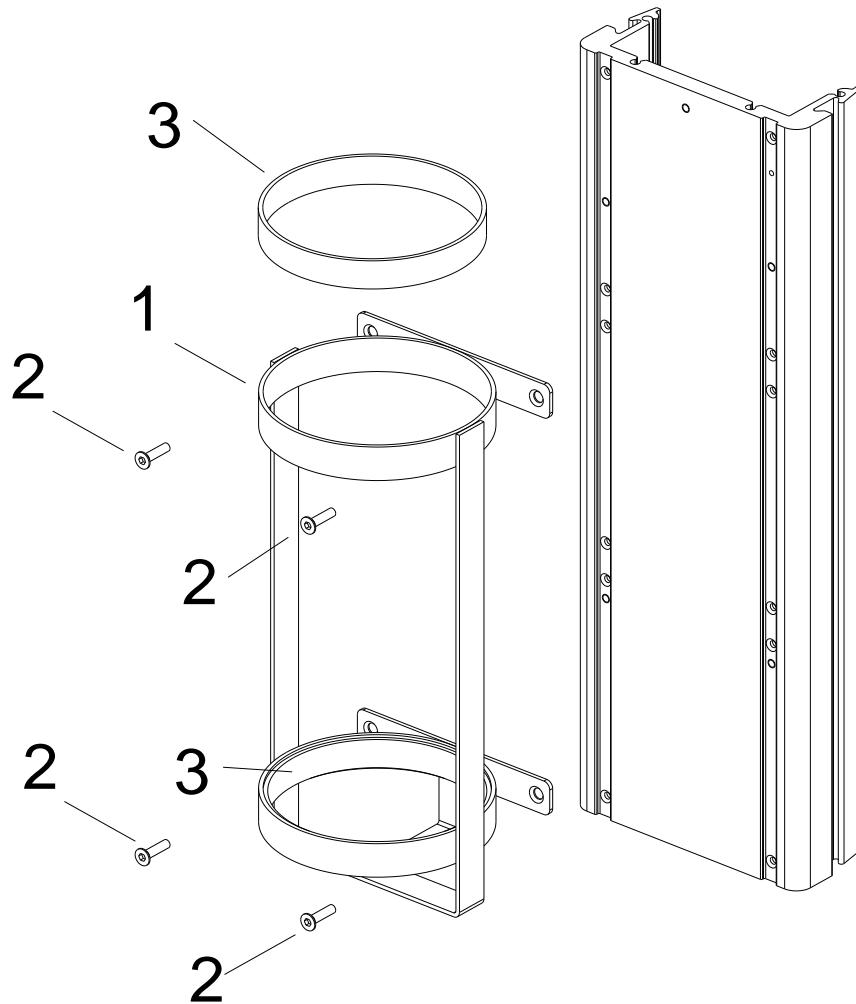
10.17 900IW311 SINGLE CYLINDER RACK

WARNING

⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.

The 900IW311 Single Cylinder Rack is designed to hold one large gas cylinder (Air Liquide B5 or similar) up to 140mm (5.5") diameter and 670mm (26.4") tall.

900IW311 SINGLE CYLINDER RACK ASSEMBLY DIAGRAM



900IW311 SINGLE CYLINDER RACK ASSEMBLY PARTS LIST

Item	Part Number	Description
1	642042007	Bracket Single Cylinder Large
2	614040208	Screw M6 x 25 CSK Allen SS
3	188042002	Tape Foam 3259 21 x 3mm

PART 11:GENERAL ACCESSORIES

11.1 900IW001 DUOSENSE™ SKIN SENSOR

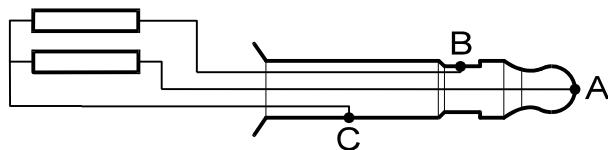
WARNING  The use of the 900IW001 with equipment other than the Fisher & Paykel Healthcare IW900 series Infant Warmer may result in increased emissions or decreased immunity of that equipment.

The DuoSense™ Skin Sensor has two thermistor beads that are continually monitored for bead mismatches, bead shorting and open circuit. Only one of the beads is used to display temperature and the other is used for a comparison. The wiring on the probe socket determines which bead is used for the display temperature (see section 11.1.6 for wiring connections).

11.1.1 SERVICING THE DUOSENSE™ SKIN SENSOR

An IW900 series infant warmer automatically detects any skin sensor faults due to either thermistor deviation or electrical contact defects (by comparison of the twin thermistor bead resistances). For additional verification of the DuoSense™ operation the following check can be performed every six months.

11.1.2 DUOSENSE™ SKIN SENSOR PLUG CONSTRUCTION



DuoSense™ skin sensors can be checked with a digital Ohmmeter. A high accuracy 4-wire Ohmmeter is recommended to eliminate measurement error due to contact resistance.

1. Measure R_{AB} the resistance from A to B
2. Measure R_{BC} the resistance from B to C
3. Measure R_{AC} the resistance from A to C

The measured resistances should then be $R_{AB} / 2 = R_{BC} = R_{AC}$ (tolerance < 2%).

Resistance vs. Temperature Curve

Selected points from the Resistance v Temperature curve for the DuoSense™ Skin Sensor are listed below:

Resistance (Ω)	Temperature ($^{\circ}\text{C}$)
2814	20.0
2252	25.0
1814	30.0
1500	34.5
1471	35.0
1370	36.7
1199	40.0

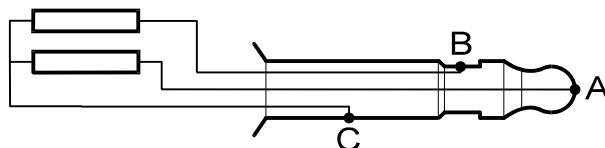
11.1.3 USING 043042566 CHECK PROBE TO CHECK TEMPERATURE MEASUREMENT

WARNING  The Infant Warmer Check Probe should only be used by qualified Bio-Medical engineers. Incorrect use could result in patient injury.

1. Unplug the currently inserted temperature sensor (if any).
2. Plug the check probe into the temperature sensor socket. Observe the temperature display of the infant warmer, the display should read $36.7^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$.
3. If the infant warmer indicates a temperature outside the above range, perform the Infant Warmer Check Probe Servicing as described in section 11.1.5.
4. If the Check Probe is within the acceptable resistance range and the displayed temperature is outside $36.7^{\circ}\text{C} \pm 0.1^{\circ}\text{C}$ then the Infant Warmer fails the temperature calibration. Please contact your Fisher & Paykel Healthcare Dealer.

NOTE: If the check probe is not removed within 40 seconds, the sensor disconnect alarm will sound.
The check probe must be removed before patient use.

11.1.4 INFANT WARMER CHECK PROBE PLUG WIRING



11.1.5 SERVICING 043042566 CHECK PROBE

If it is suspected that the Check Probe is defective, the following test may be performed with a digital Ohmmeter. A high accuracy 4-wire Ohmmeter is recommended to eliminate measurement error due to contact resistance.

1. Measure R_{AB} the resistance from A to B
2. Measure R_{BC} the resistance from B to C
3. Measure R_{AC} the resistance from A to C

The measured resistances should be:

Connection	Minimum Resistance (Ω)	Maximum Resistance (Ω)
R_{AB}	1900	1960
R_{BC}	1369	1372
R_{AC}	530	590

11.1.6 TEMPERATURE SENSOR SOCKET WIRING

The DuoSense™ Skin Sensor has two thermistor beads that are continually monitored for bead mismatches, bead shorting and open circuit. The wiring in the socket is:

Bead 1 (the end contact 'A' in 11.1.2) is the displayed temperature and bead 2 (the middle contact 'B') is used to check for mismatching temperatures. The probe socket with this wiring has two extra $10\mu\text{F}$ 25V electrolytic capacitors for additional EMC protection.

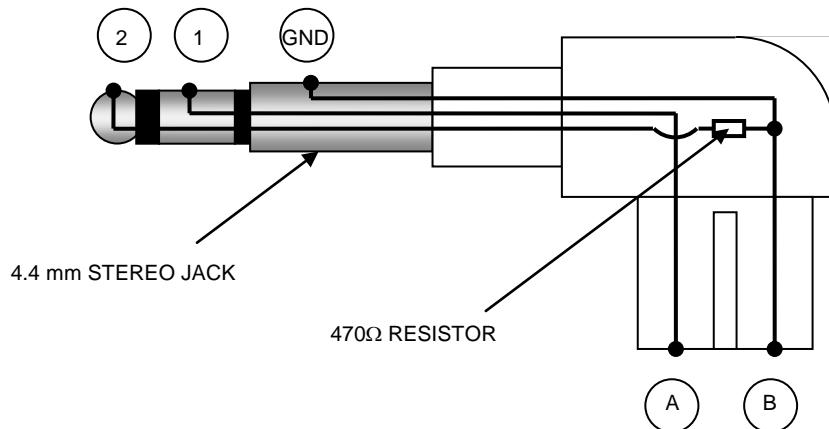
NOTE: The bead mismatch alarm (shown as the Sensor Disconnect alarm) is only operational if the displayed temperature bead is between 27°C and 39°C . Outside of this range the Check baby and High Skin Temperature alarms override the bead mismatch alarm.

11.2 900IW003 SINGLE USE SENSOR ADAPTOR

WARNING  The use of the 900IW003 with equipment other than the Fisher & Paykel Healthcare IW900 series Infant Warmer may result in increased emissions or decreased immunity of that equipment.

The 900IW003 Single Use Sensor Adaptor is designed to allow single use temperature sensors which have one sensor bead to be used with the CosyCot™ Infant Warmer.

11.2.1 900IW003 SINGLE USE SENSOR ADAPTOR WIRING



11.2.2 SERVICING 900IW003 ADAPTOR

If it is suspected that the Adaptor is defective, the following test may be performed with a digital Ohmmeter. A high accuracy 4-wire Ohmmeter is recommended to eliminate measurement error due to contact resistance.

1. Measure $R_{GND\ B}$ the resistance from GND to B
2. Measure R_{1A} the resistance from 1 to A
3. Measure $R_{GND\ 2}$ the resistance from GND to 2
4. Measure $R_{GND\ 1}$ the resistance from GND to 1
5. Measure R_{12} the resistance from 1 to 2

The measured resistances should be:

Connection	Resistance (Ω)
$R_{GND\ B}$	≤ 1
R_{1A}	≤ 1
$R_{GND\ 2}$	447 - 493
$R_{GND\ 1}$	$\geq 1M\ (O.L)$
R_{12}	$\geq 1M\ (O.L)$

11.3 900IW205 X-RAY TRAY

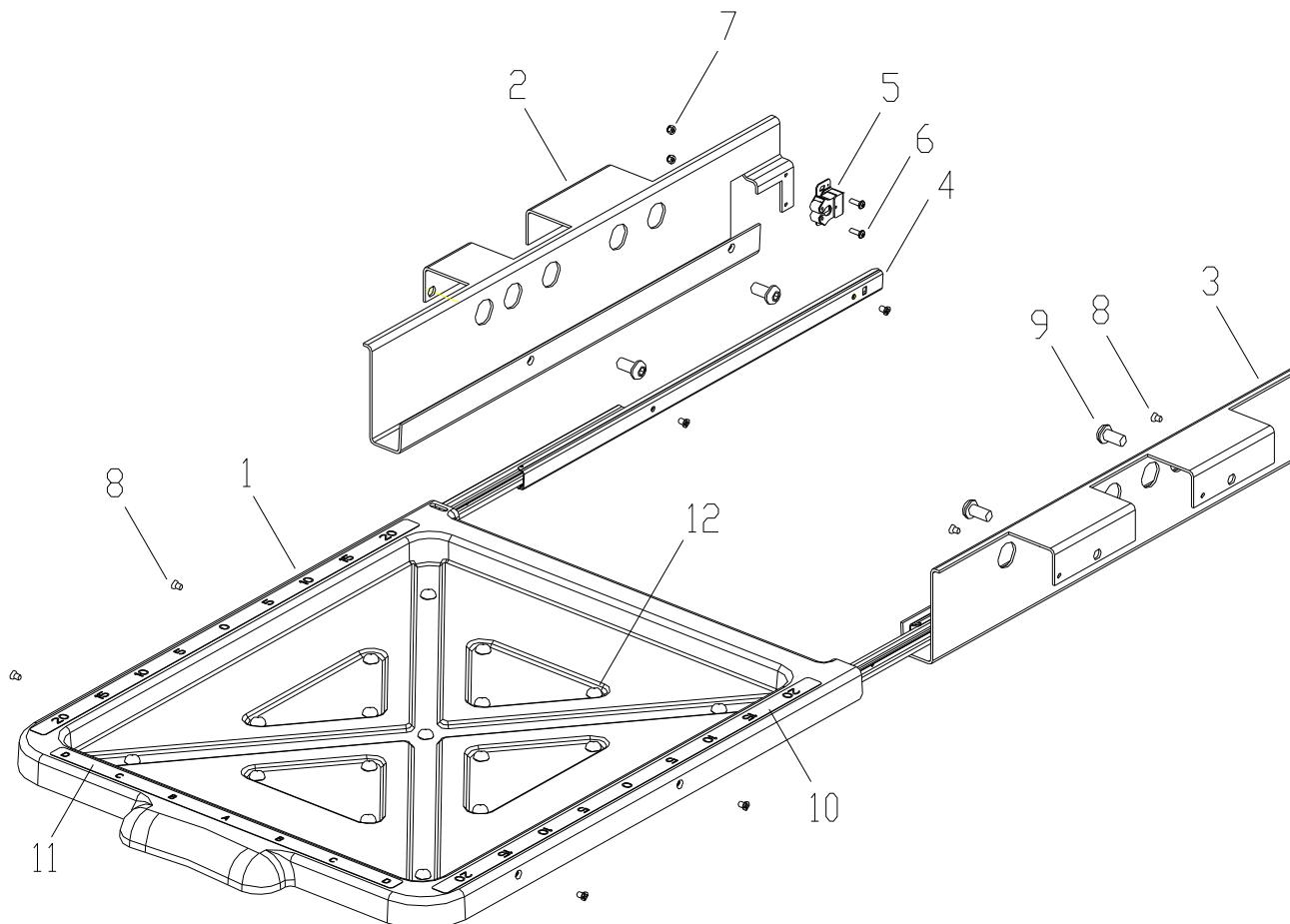
The 900IW205 X-Ray Tray accessory also includes the following labels for attachment to the bassinet side panels:

183042170	Sticker X-Ray Tray Side Blue	(adheres to the left and right side panels)
183042171	Sticker X-Ray Tray End Blue	(adheres to the front and rear side panels)

11.3.1 900IW205 X-RAY TRAY ASSEMBLY PARTS LIST

Item	Part Number	Description
1	694042385	X-Ray Tray
2	642042078	Bracket Slide X-Ray Tray Left
3	642042079	Bracket Slide X-Ray Tray Right
4	661042050	Slider Assy X-Ray Tray - Pair
5	661042052	Roller Catch X-Ray
6	614040806	Screw M3 x 10 Pan Pozi Zn/St
7	621040506	Nut M3 Nyloc
8	614040329	Screw M4 x 6 Csk Pozi Zn/St
9	614040325	Screw M8 x 16 Allen Button Hd
10	183042170	Sticker X-Ray Tray Side Blue
11	183042171	Sticker X-Ray Tray End Blue
12	693041436	Foot bump-on

11.3.2 900IW205 X-RAY TRAY ASSEMBLY DIAGRAM



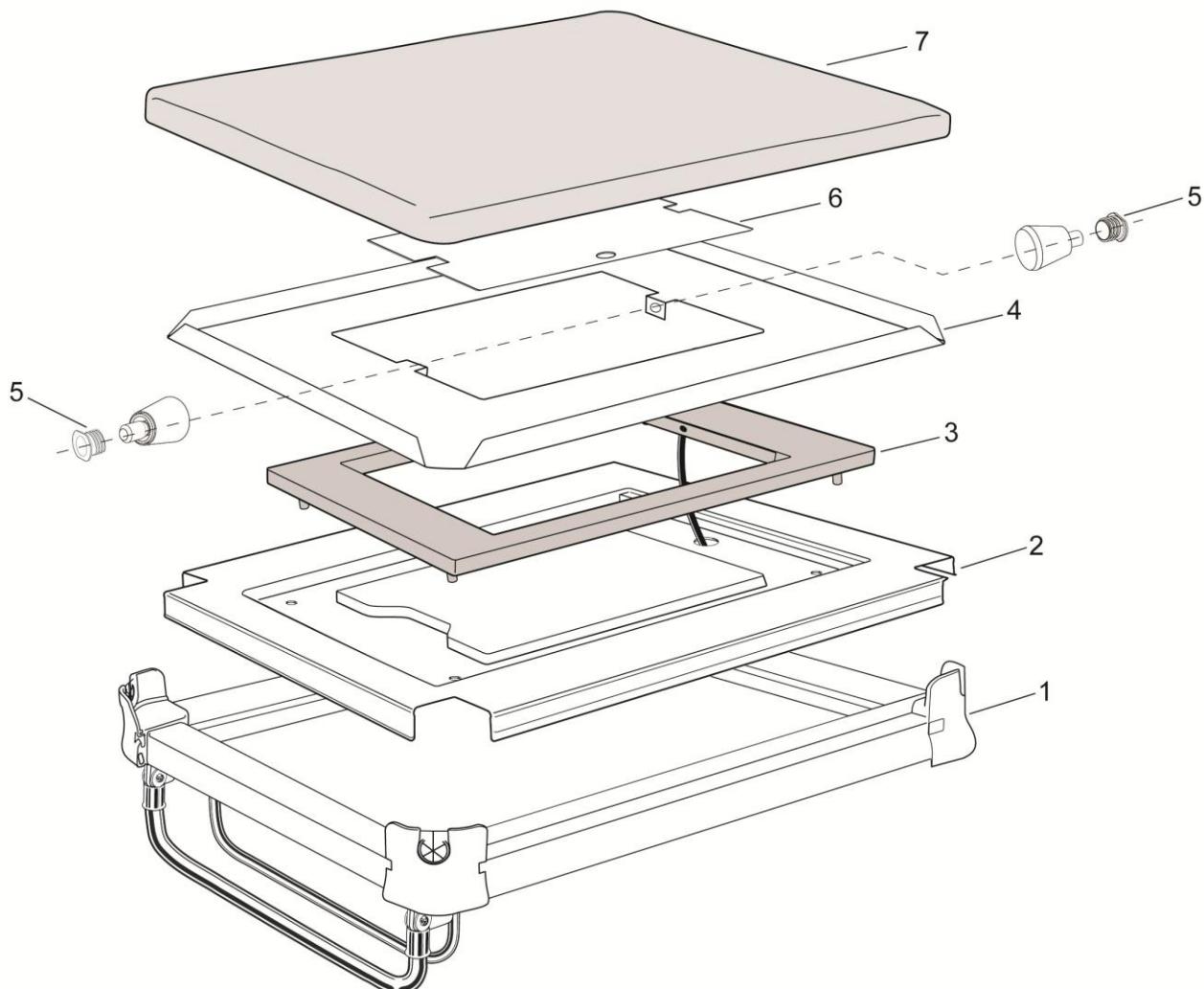
11.4 900IW230 NEOWEIGH™ INFANT SCALES

Refer to the CD accompanying the neoweigh™ in-bed scales for the Operating and Technical Manual (ref. 185045544).

900IW230x neoweigh™ Infant Scales Assembly Parts List

Item	Part Number	Description
1	-	Bassinet assembly
2	694042689	Underlay Scales
3	-	Load Cell Platform
4	642042153	Tray Scales
5	642042154	Clips Scales Tray
6	694042691	Insert Scales Tray
7	254042001	Mattress Scales

900IW230x neoweigh™ Infant Scales Assembly Diagram



11.5 900IW301 SHORT MOUNTING POLE

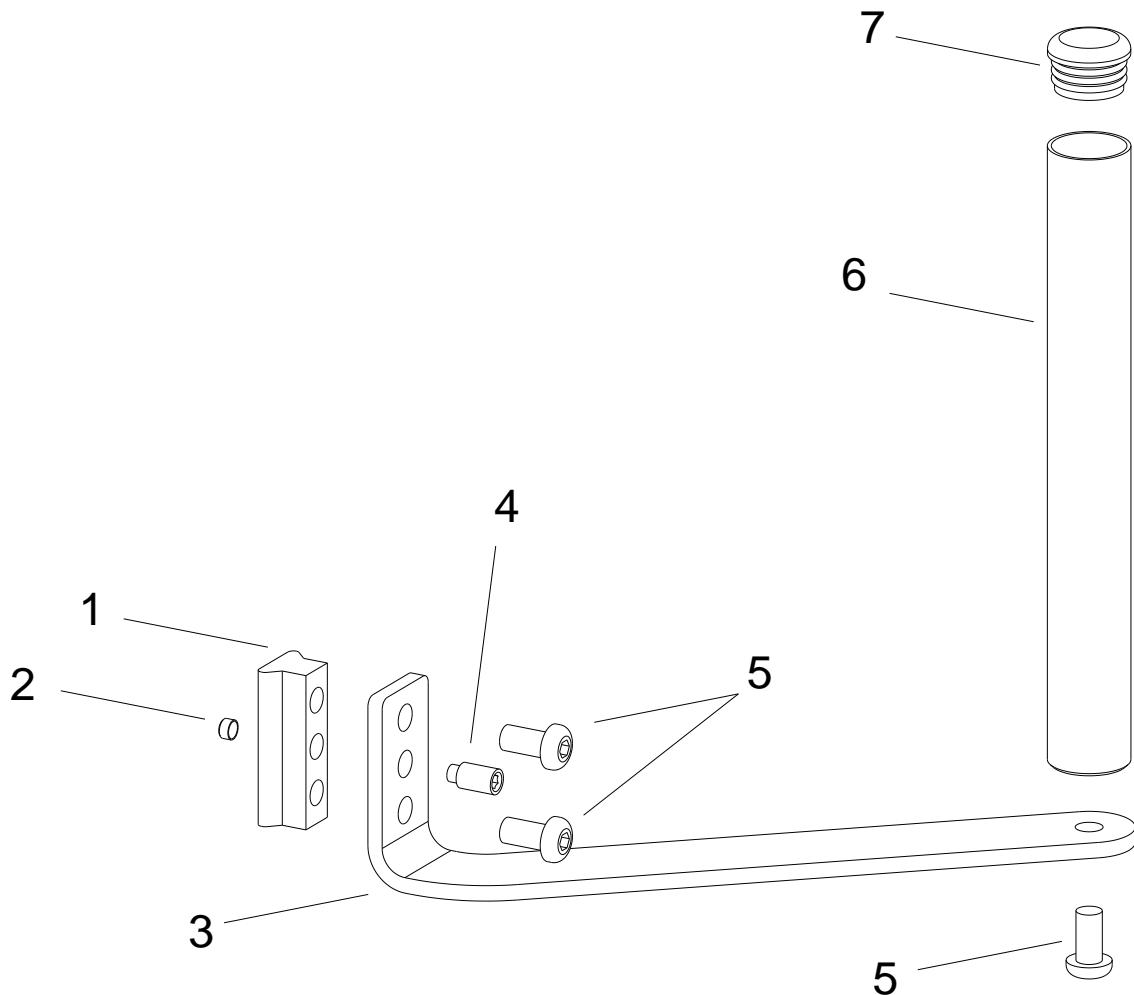
WARNING

- ⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
- ⚠ Where possible, evenly distribute the weight of accessories on both sides of the unit.

11.5.1 900IW301 SHORT MOUNTING POLE ASSEMBLY PARTS LIST

Item	Part Number	Description
1	655040088	Block Support 50mm IW2G
2	693041419	Cap Grub Screw
3	641040779	Bracket Mtg Pole Accessory Left
4	614040326	Screw M8 x 16 Grub Hex Dog Point
5	614040325	Screw M8 x 16 Allen Button Head
6	651040202	Pole Instrument Mounting Short
7	693100019	Plug Plastic 1" Black

11.5.2 900IW301 SHORT MOUNTING POLE ASSEMBLY DIAGRAM



11.6 900IW302 LONG MOUNTING POLE

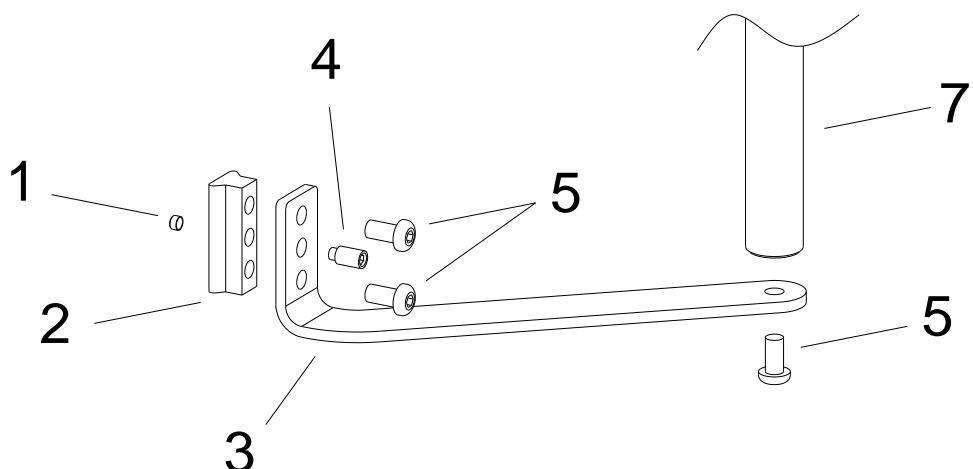
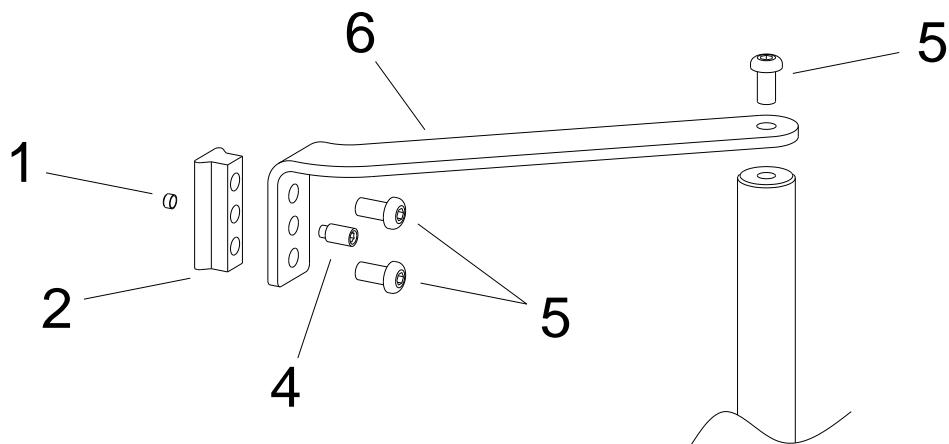
WARNING

- ⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
- ⚠ Where possible, evenly distribute the weight of accessories on both sides of the unit.

11.6.1 900IW302 LONG MOUNTING POLE ASSEMBLY PARTS LIST

Item	Part Number	Description
1	693041419	Cap Grub Screw
2	655040088	Block Support 50mm IW2G
3	641040779	Bracket Mtg Pole Accessory Left
4	614040326	Screw M8 x 16 Grub Hex Dog Point
5	614040325	Screw M8 x 16 Allen Button Head
6	641040780	Bracket Mtg Pole Accessory Right
7	651040203	Pole Instrument Mounting Long

11.6.2 900IW302 LONG MOUNTING POLE ASSEMBLY DIAGRAM



11.7 900IW303 MOUNTING BLOCK

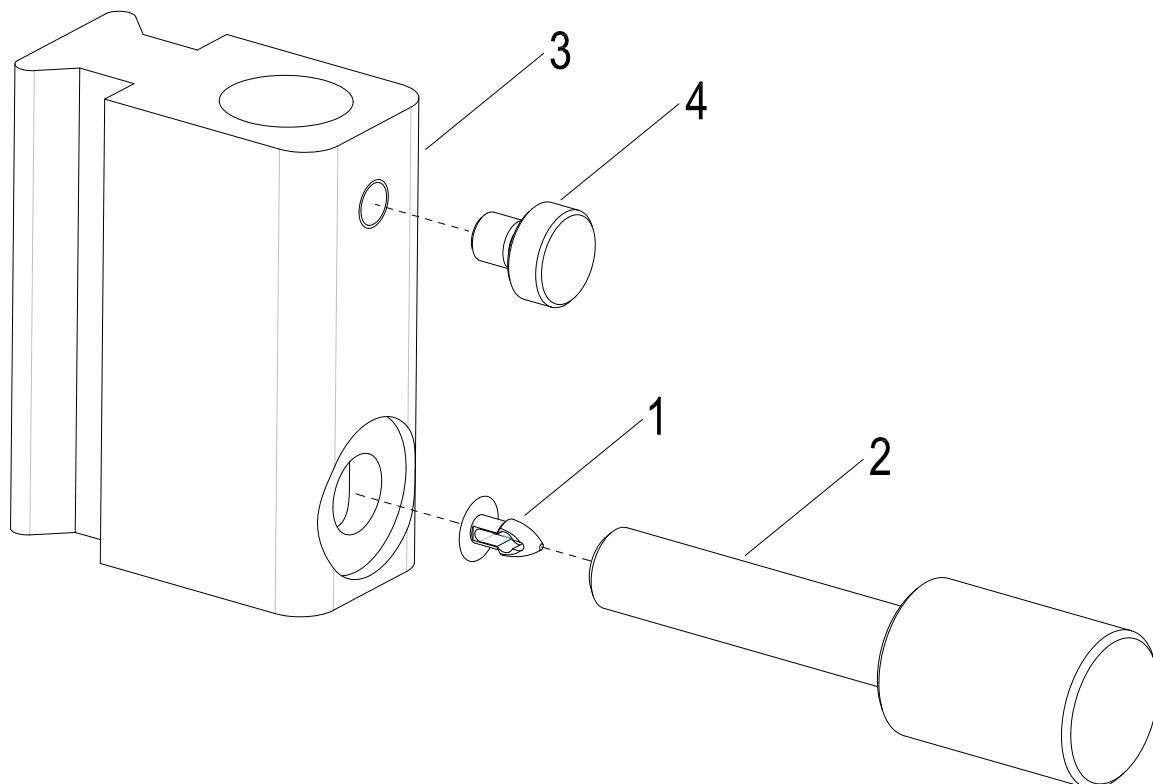
WARNING

-  Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
-  Where possible, evenly distribute the weight of accessories on both sides of the unit.

11.7.1 900IW303 SHELF / 900IW520 NEOSPOT™ MOUNTING BLOCK ASSEMBLY PARTS LIST

Item	Part Number	Description
1	336060132	Plug Hole Cover Natural Nylon
2	651040192	Knob Screw Assy M10 Length 46
3	642042053	Block Support Quad Pole
4	614042317	Screw M6 x 12 Knurled Hd SS

11.7.2 900IW303 SHELF / 900IW520 MOUNTING BLOCK ASSEMBLY DIAGRAM



11.8 900IW305 HOOK CABLE / HOSE IW2G

WARNING

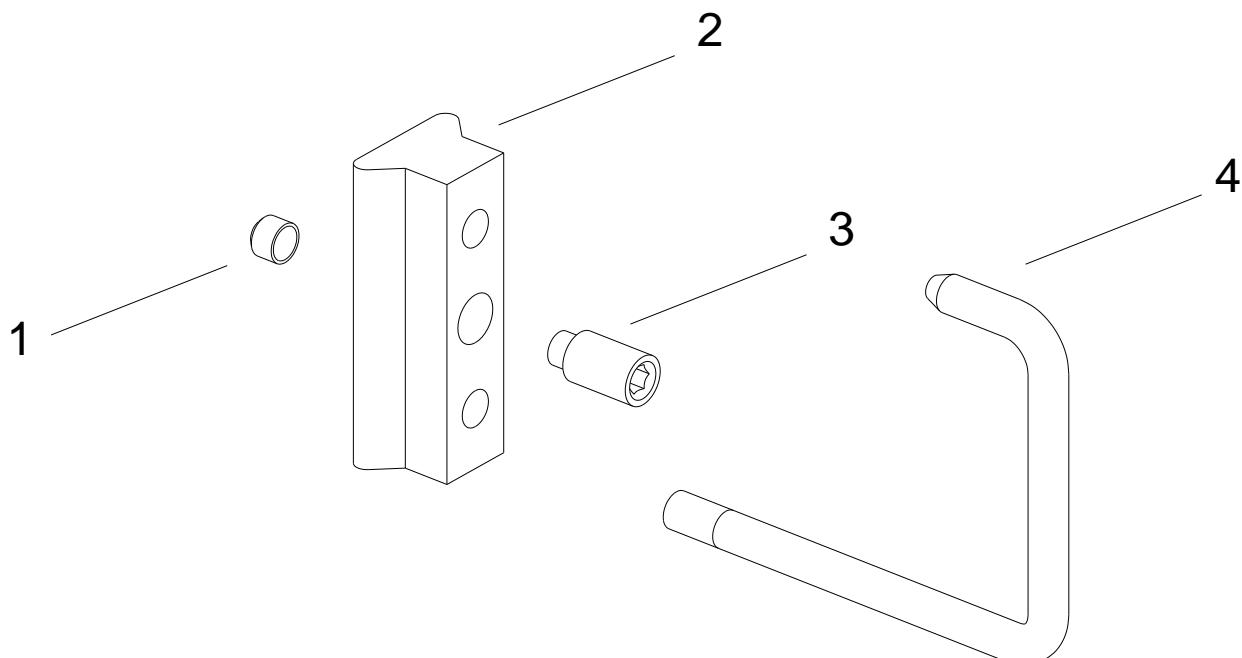
- ⚠ The maximum weight limit for each Cable/Hose Hook is 5kg (11lbs).
- ⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
- ⚠ Where possible, evenly distribute the weight of accessories on both sides of the unit.

11.8.1 900IW305 HOOK CABLE / HOSE ASSEMBLY PARTS LIST

Item	Part Number	Description
1	693041419	Cap Grub Screw
2	655040107	Block Support 50mm IW2G
3	614040326	Screw M8 x 16 Grub Hex Dog Point
4	642042016	Hook Cable/Hose IW2G

NOTE: Loctite 262 is used to prevent the hook (4) from unscrewing from the support block (2)

11.8.2 900IW305 HOOK CABLE / HOSE ASSEMBLY DIAGRAM



11.9 900IW306 ACCESSORY HOOK IW2G

WARNING

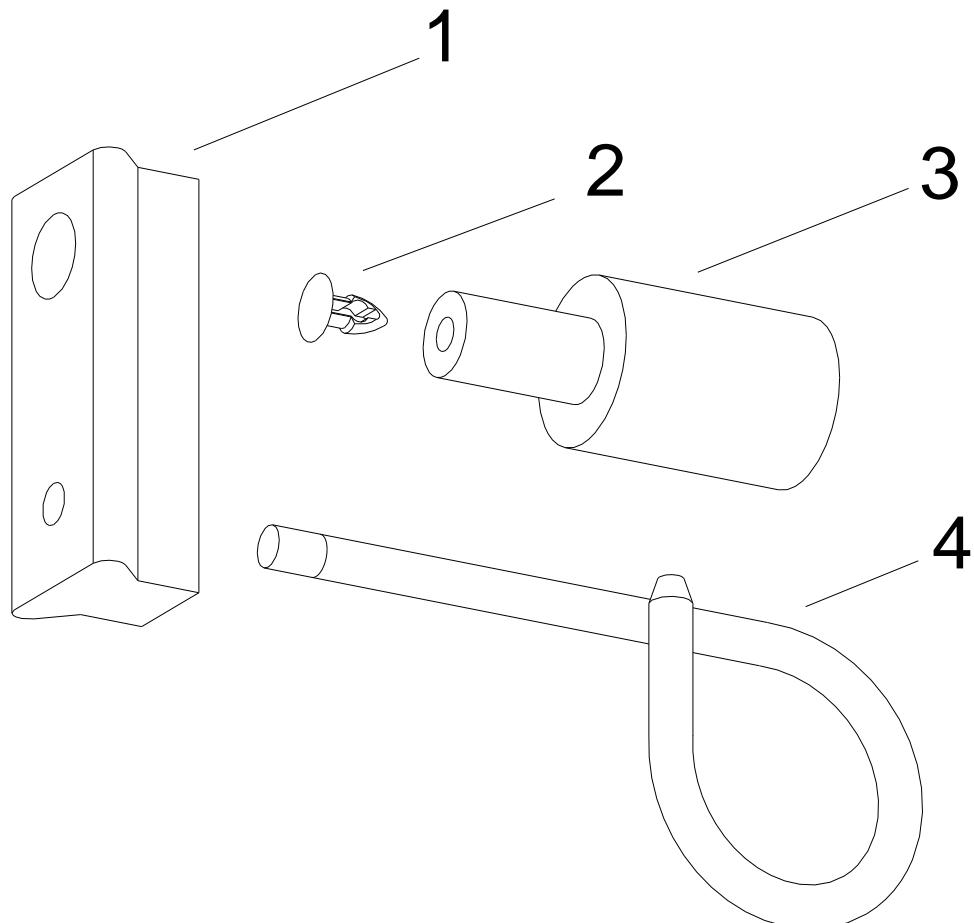
- ⚠ The maximum weight limit for each Cable/Hose Hook is 5kg (11lbs).
- ⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
- ⚠ Where possible, evenly distribute the weight of accessories on both sides of the unit.

11.9.1 900IW306 ACCESSORY HOOK ASSEMBLY PARTS LIST

Item	Part Number	Description
1	655040084	Block Support Hook Accessory IW2G
2	336060132	Plug Hole Cover Natural Nylon
3	651040204	Knob Screw Assy M10 Length 18
4	651040172	Hook Water bag

NOTE: Loctite 262 is used to prevent the accessory hook (4) from unscrewing from the support block (1)

11.9.2 900IW306 ACCESSORY HOOK ASSEMBLY DIAGRAM



11.10 900IW313 QUAD HOOK IV POLE

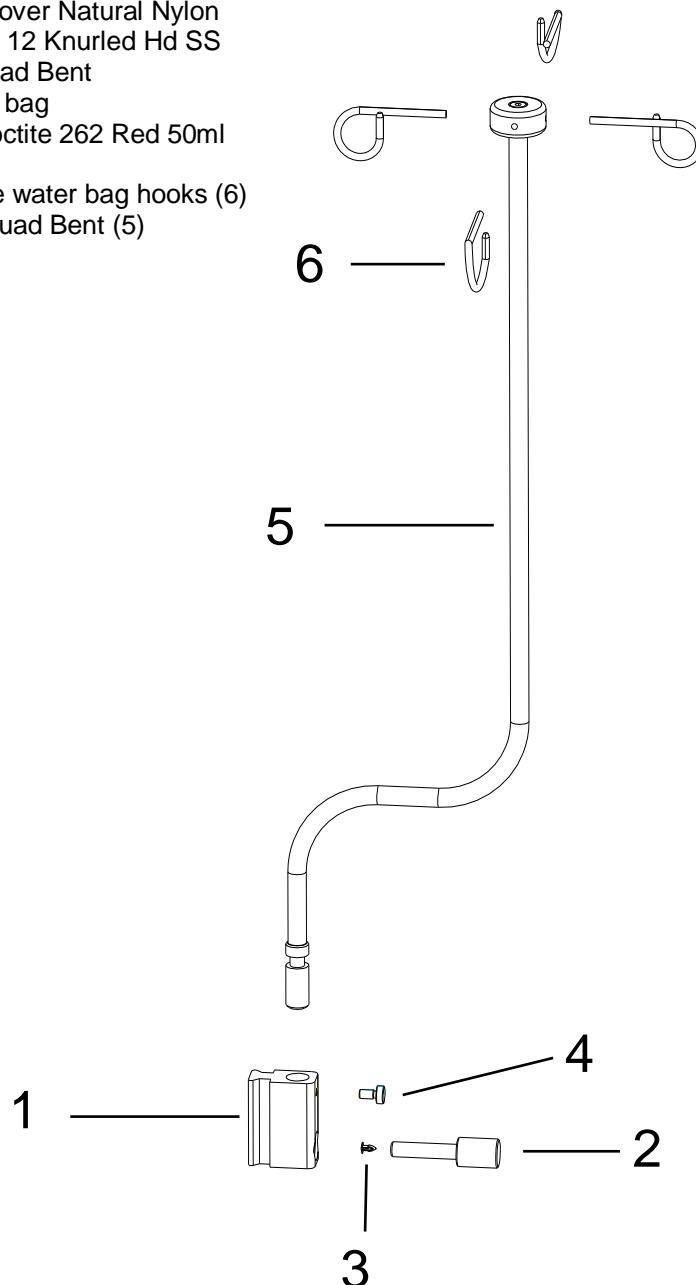
WARNING

- ⚠ The maximum weight limit for each Cable/Hose Hook is 1kg (2.2lbs), or a total weight of 4kg (8.8lbs).
- ⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
- ⚠ Where possible, evenly distribute the weight of accessories on both sides of the unit.
- ⚠ Not suitable for use with IW910/920 Mobile Infant Warmers.

11.10.1 900IW313 QUAD HOOK IV POLE ASSEMBLY PARTS LIST

Item	Part Number	Description
1	642042053	Block Support Quad Pole
2	651040192	Knob Screw Assy M10 Length 46
3	336060132	Plug Hole Cover Natural Nylon
4	614042317	Screw M6 X 12 Knurled Hd SS
5	642042112	Pole I.V. Quad Bent
6	651040172	Hook Water bag
7	111040084	Adhesive Loctite 262 Red 50ml

NOTE: Loctite 262 is used to prevent the water bag hooks (6) from unscrewing from Pole I.V. Quad Bent (5)



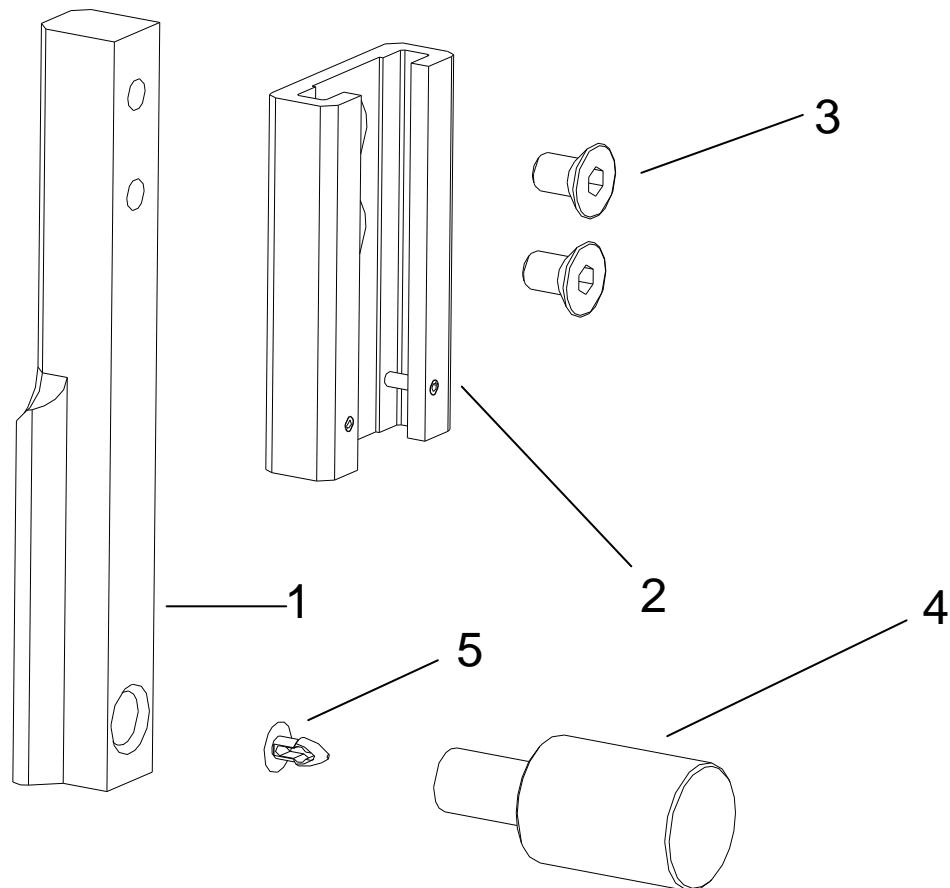
11.11 900IW314 NEOBLUE® MINI (PHOTOTHERAPY) MOUNTING BRACKET

WARNING

- ⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
- ⚠ Where possible, evenly distribute the weight of accessories on both sides of the unit.

11.11.1 900IW314 NATUS PHOTOTHERAPY MOUNTING BRACKET PART LIST

Item	Part Number	Description
1	642042116	Extrusion Dovetail Phototherapy
2	641042006	C Slot 30 X 5 Silver - For M6
3	614040227	Screw M6 X 16 Csk Allen S/S
4	651040204	Knob Screw Assy M10 Length 18
5	336060132	Plug Hole Cover Natural Nylon



11.12 900IW312A/J UPS MOUNTING KIT FOR COSYCOT™ INFANT WARMERS

WARNING

- ⚠ The UPS unit weighs 19kg, care should be taken when lifting or manoeuvring the unit.
- ⚠ Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.
- ⚠ The UPS and following warnings are only intended for use with the Fisher & Paykel Healthcare CosyCot™ Infant Warmer.
- ⚠ Read the POWERVAR User Guide completely before using this product.
- ⚠ CosyCot™ will not operate from mains without UPS switched on (Hold Power On/Off button for > 3 sec).
- ⚠ Do not cover air vents on shroud (cover).
- ⚠ Do not operate electrical accessories (e.g. phototherapy lamp) when the CosyCot™ is disconnected from the mains and is being powered by the UPS.
- ⚠ Perform a functional test on the battery every month after 6 months use.
- ⚠ Change the battery every 12 months if usage is typically 2-3 times/week
- ⚠ Ensure wraps (e.g. NeoWrap™) or blankets are available as back up in the event of UPS battery failure.
- ⚠ Keep dry

11.12.1 UPS GENERAL INFORMATION

Two components are required to provide an Uninterruptible Power Supply (UPS) to a 900 Series CosyCot™ Infant Warmer (IW93x, IW95x); the UPS itself and a mounting kit to secure it to the CosyCot™ Infant Warmer.

The mounting kit is voltage specific to ensure the connection cable has the correct plugs.
900IW312J (120V)
900IW312A (230V)

At full element power (100%) and no other loads the UPS will power the warmer for approximately 8 minutes when fully charged.

11.12.2 UPS TECHNICAL SPECIFICATIONS

The PowerVar UPS contains an isolating transformer to minimise earth leakage currents and provides a true sinusoidal output.

The model depends on the mains supply voltage of the hospital:

For 120V mains supply

POWERVAR Uninterruptible Power Manager
Model ABCE800-11IEC
Conforms to UL2601-1 and cUL C22.2 No. 601.1

For 230V mains supply

POWERVAR Uninterruptible Power Manager
Model ABCE800-22IEC
Conforms to IEC 60601-1, EN60601-1 & CE.

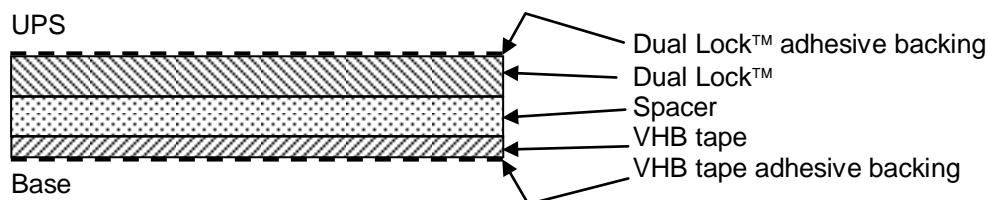
Model:	PowerVar Inc. UPS ABCE800-11IEC or ABCE800-22IEC (voltage dependent)
VA Rating:	800VA
Watt Rating:	520W
Input Current:	4.0A
Output Current:	3.5A
Weight:	19kg
Warranty:	Batteries – 6 months* Materials and Workmanship – 5 Years*

NOTE: *Warranties supplied by PowerVar

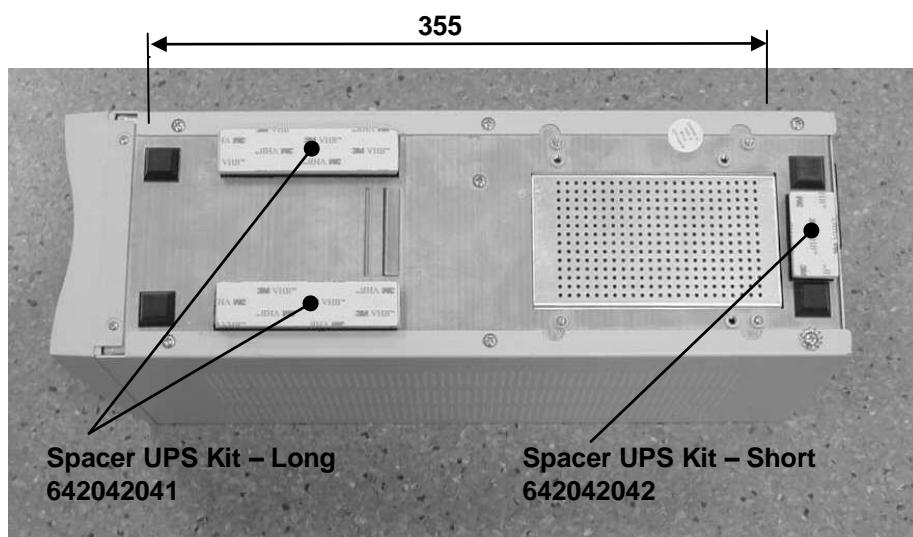
11.12.3 MOUNTING KIT

The 900IW312X UPS Mounting Kit comes with spacers – these lift the installed UPS off the CosyCot™ base to ensure free cooling airflow to the UPS. The spacers come with pre-applied tape to adhere to the base and Dual Lock™ to adhere to the UPS. Dual Lock™ is a form of industrial strength Velcro that can be detached and reattached multiple times.

11.12.4 CROSS-SECTION OF MOUNTING KIT SPACER



11.12.5 UNDERSIDE OF UPS – SHOWING POSITION OF DUAL LOCK™ MOUNTING STRIPS



11.12.6 UPS SHROUD AND LOCATION OF DUAL LOCK™ MOUNTING SQUARES.



11.12.7 POWERVAR CONTACT DETAILS:

FOR THE US: POWERVAR Inc, 1450 Lakeside Drive Waukegan, IL 60085 United States of America. Tel: 001 847 596 0700 Fax: 001 847 596 7100	For Europe : POWERVAR, Ltd. 61 Shrivenham Hundred Business Park, Shrivenham, Swindon, Wiltshire SN6 8TZ United Kingdom Tel: +44 (0) 1793 786050 Fax: +44 (0) 1793 782250
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Further information about the POWERVAR range of products and the above UPS units can also be obtained from their website at www.powervar.com.

11.12.8 REMOVING THE UPS FOR SERVICING

WARNING

-  Only qualified personnel should carry out service & maintenance procedures.
-  To avoid the possibility of electric shock hazard when performing maintenance procedures, disconnect the UPS and CosyCot™ from mains power.

To Remove the UPS from the Warmer Base:

1. Remove the shroud (1) by detaching the Dual Lock™ (6).

NOTE: This requires some force, grasp the shroud near the Dual Lock™ when removing to minimise any bending or damage to the shroud.

2. Unplug the UPS from the CosyCot™ Infant Warmer and from the wall.

3. Lock the CosyCot™ castors.

4. Pull sideways on the top of the UPS to detach the Dual Lock™ on one side.

NOTE: this will require some force.

5. Once one side is detached the UPS can be removed by lifting and detaching from the remaining two Dual Lock™ strips.

CAUTION The UPS is heavy (19kg).

6. For information on servicing for the UPS itself refer to the PowerVar User Manual.

7. When replacing the UPS after servicing, align the UPS with the Dual Lock™ mounting strips (4 & 5) and press down on the UPS, an audible click should be heard on engagement.

8. Attach the power cords, from the wall to the UPS and from the UPS to the CosyCot™.

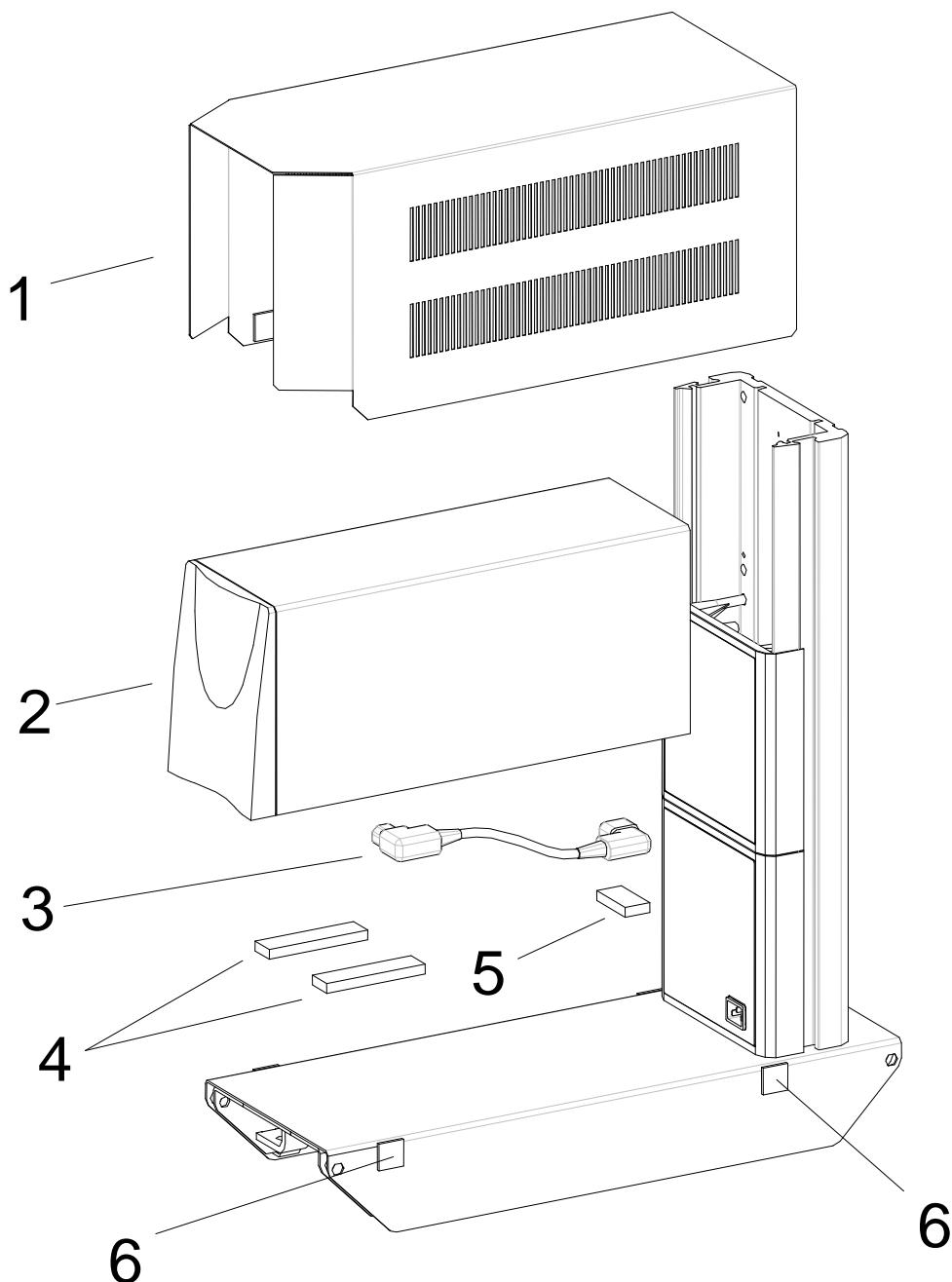
9. Place the shroud back over the UPS, and slide back until it touches the column. This will align the Dual Lock™ (6) which is engaged with pressure. An audible click should be heard on engagement.

11.12.9 900IW312A/J UPS MOUNTING KIT ASSEMBLY PARTS LIST

Item	Part Number	Description
1	642042039	Shroud UPS
2	043042205	PowerVar UPS
3	043042138	Mains Lead Assy – UPS/Warm 230V Used on 900IW312A only
4/5/6	043042395	Mains Lead Assy – UPS/Warm 120V Used on 900IW312J only
		Kit Spacer UPS

NOTE: 043042395 Kit Spacer UPS consists of a double sided 3M VHB tape and Dual Lock™, an industrial strength Velcro, and is difficult to remove once installed.

11.12.10 900IW312A/J UPS MOUNTING KIT ASSEMBLY DIAGRAM



11.13 900IW401 SIDE SHELF

WARNING



The maximum weight limit for each shelf is 15kg (33lbs).



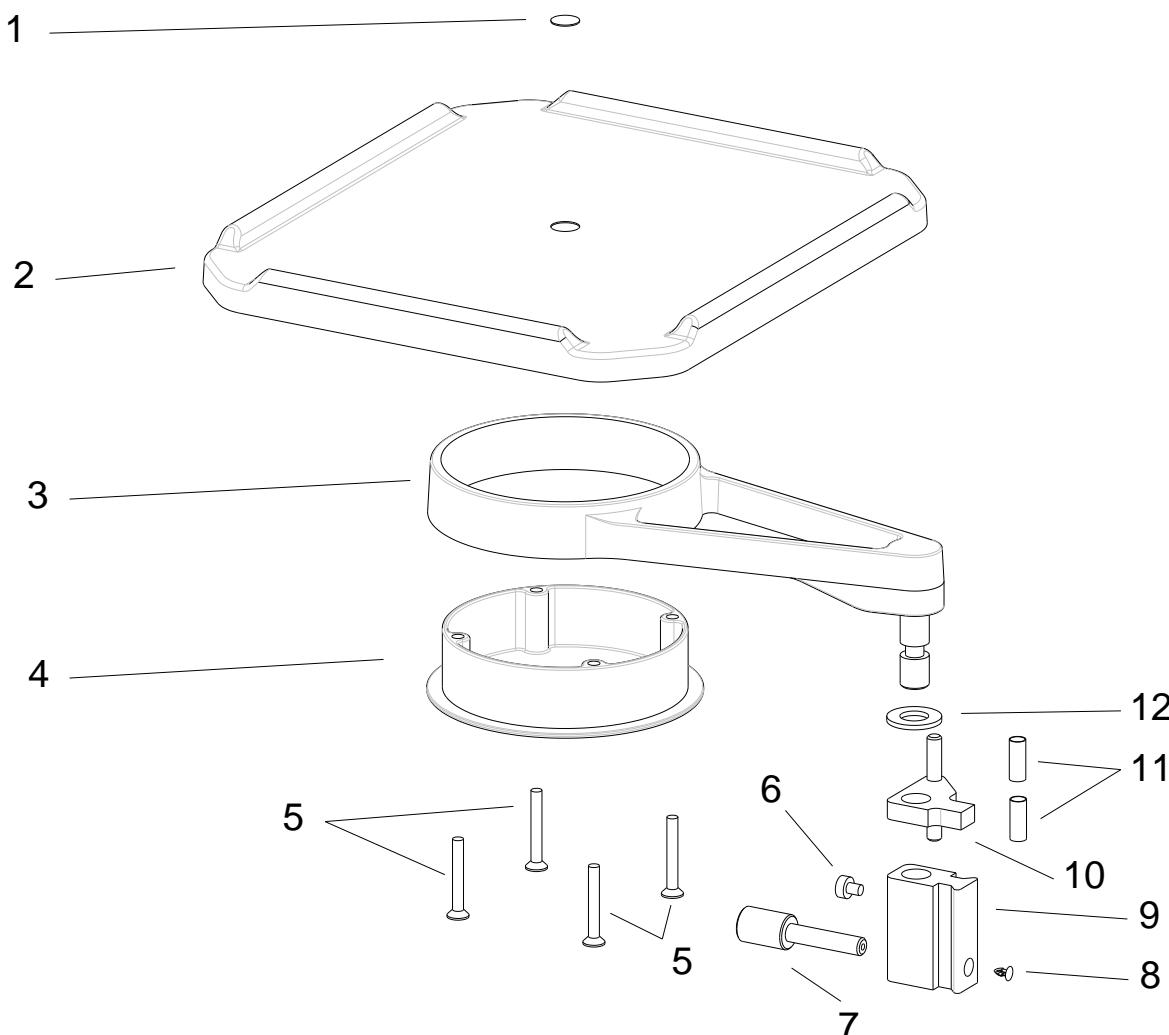
Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.

11.13.1 900IW401 SIDE SHELF AND SUPPORT BLOCK ASSEMBLY PARTS LIST

Item	Part Number	Description
1	183042032	Label Cover
2	694042082	Shelf Plastic Warmer
3	656040033	Shelf Arm Warmer
4	693040601	Shelf Swivel Warmer
5	614042003	Screw M6 x 45mm CSK Pozi
6	614042317	Screw M6 x 7.5 Thumbscrew
7	651040192	Knob Screw Assy M10 Length 46
8	336060132	Plug Hole Cover Natural Nylon
9	642042053	Block Support Quad Pole
10	642042026	Swing Limiter
11	331042074	Heatshrink
12	621042002	Washer Nylon 15.8 x 25.4 x 2.6

NOTE: Loctite 262 is used to prevent the screws (5) from unscrewing from the plastic shelf (1)

11.13.2 900IW401 SIDE SHELF AND SUPPORT BLOCK ASSEMBLY DIAGRAM



11.14 900IW408 STORAGE DRAWER SYSTEM

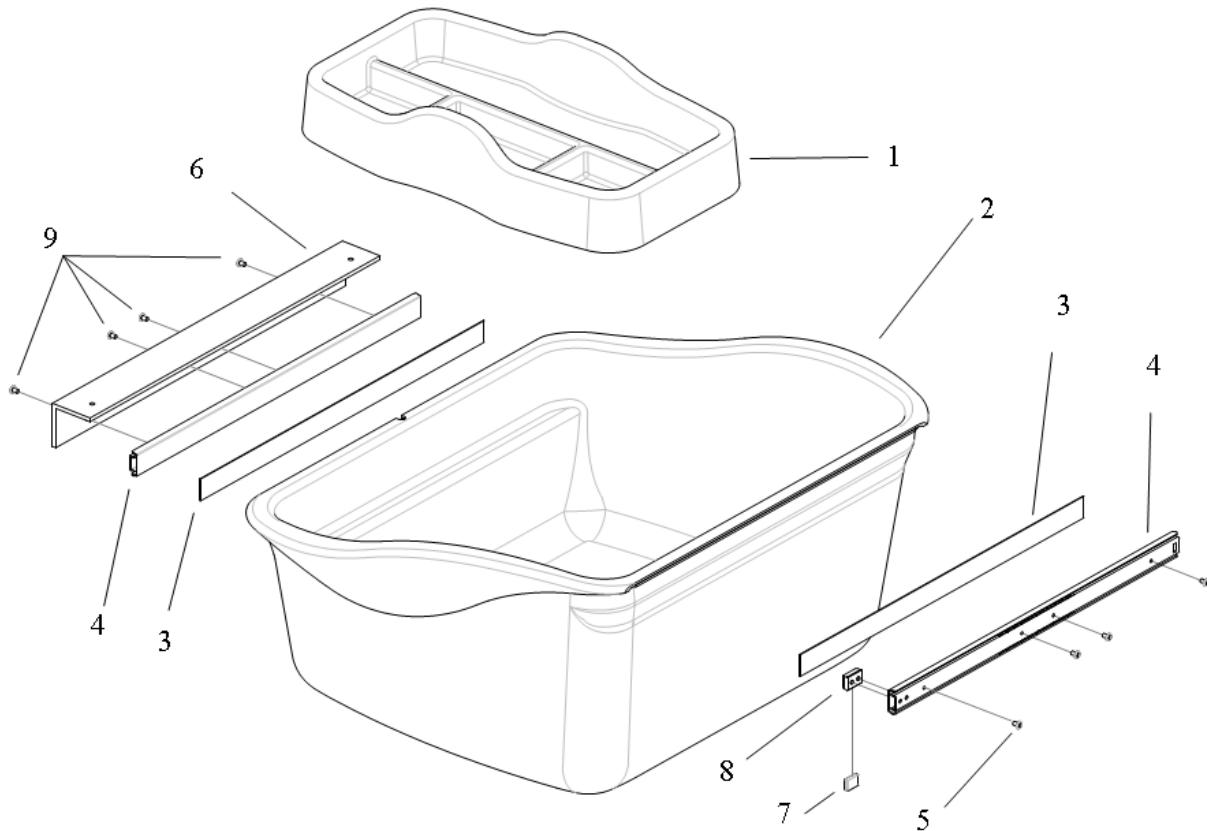
WARNING

-  The maximum weight limit is 7kg (15lbs).
-  Care should be taken to ensure that the maximum total accessory weight on the warmer does not exceed the maximum specification, refer to Section 3.2.2.

11.14.1 900IW408 STORAGE DRAWER SYSTEM ASSEMBLY PARTS LIST

Item	Part Number	Description
1	694042308	Tray Multi – purpose
2	694042306	Storage Drawer Sliding
3	188042022	Tape VHB4951 Grey 25.4mmx33m
4	661042066	Slider Assy Storage Bin – each
5	614042343	Screw M4x6 Washer Head 55
6	642042069	Bracket Slider Support
7	432042008	Magnet Drawer Slide Nd-Fe-B
8	694042573	Magnet Holder – Drawer Slide
9	614042334	Screw M4x6 Pan Phil SS

11.14.2 900IW408 STORAGE DRAWER SYSTEM ASSEMBLY DIAGRAM

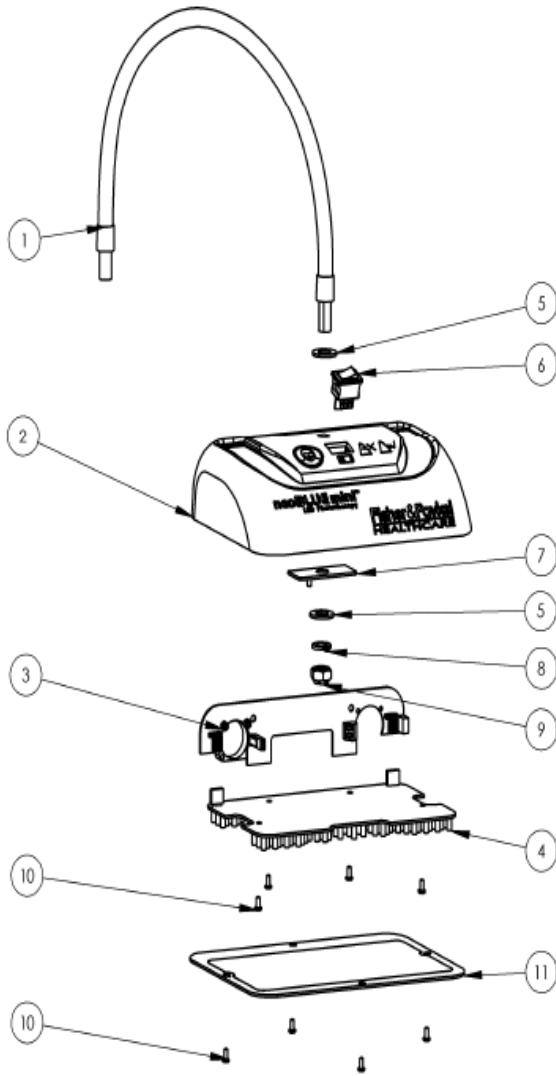


11.15 900IW510 NEOBLUE® MINI

Refer to the CD accompanying the neoBLUE® mini phototherapy unit for the Operating and Service Manual (ref. 043042925).

900IW510 neoBLUE® mini Parts List

Note: The mounting bracket is available as item 900IW314 – see sec. 11.11.



Note: Only the gooseneck portion of the adjustable arm is shown above.

Item No.	Part No. Natus	Part No. Fisher & Paykel	Description	Qty
1	040806	043042920	Adjustable Arm with Pole Mount and Power Supply	1
2	040834	043042921	Enclosure, Polycarbonate W/F&P Artwork	1
3	040783	043042922	Current PCB	1
4	040784	043042923	LED PCB	1
5	800240	-	Nylon Washer	2
6	600122	-	On/Standby Switch	1
7	030745	-	Plate w/Insert	1
8	030748	-	Tab Washer	1
9	800244	-	Locking Nut	1
10	800106	-	Screw, Phillips Pan Head, 4-40 x 1/4", SS	8
11	030741	043042924	Lens, Polycarbonate	1
12	030764	-	Spare Rail Mount (not shown)	1
13	-	043042925	neoBLUE mini User Manual CD	-

11.16 900IW520 NEOSPOT™ INFANT PROCEDURE LIGHT

For neoSPOT® procedure light refer to the relevant specification:

AS 900IW520A NEOSPOT PROCEDURE LIGHT 230V
AS 900IW520E NEOSPOT PROCEDURE LIGHT 230V EU
AS 900IW520J NEOSPOT PROCEDURE LIGHT 120V US
AS 900IW520K NEOSPOT PROCEDURE LIGHT 230V UK

Notes:

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