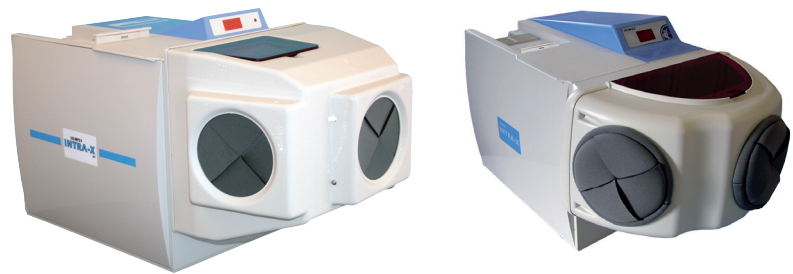


VELOPEX[®]

Automatic X-Ray Film Processor

MK6 INTRA-X



TECHNICAL MANUAL

FOR TRAINED TECHNICAL PERSONNEL

WARNING:

Do not plug into the electrical mains power supply before reading this manual - or before filling the machine with liquids.



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Hi-Tech
Diagnostics
Service

MAKERS OF DENTAL, VETERINARY AND MEDICAL EQUIPMENT

I/LIT0141P INTRA-X Technical Manual Iss.2
Issued: 14/12/10

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OVERVIEW

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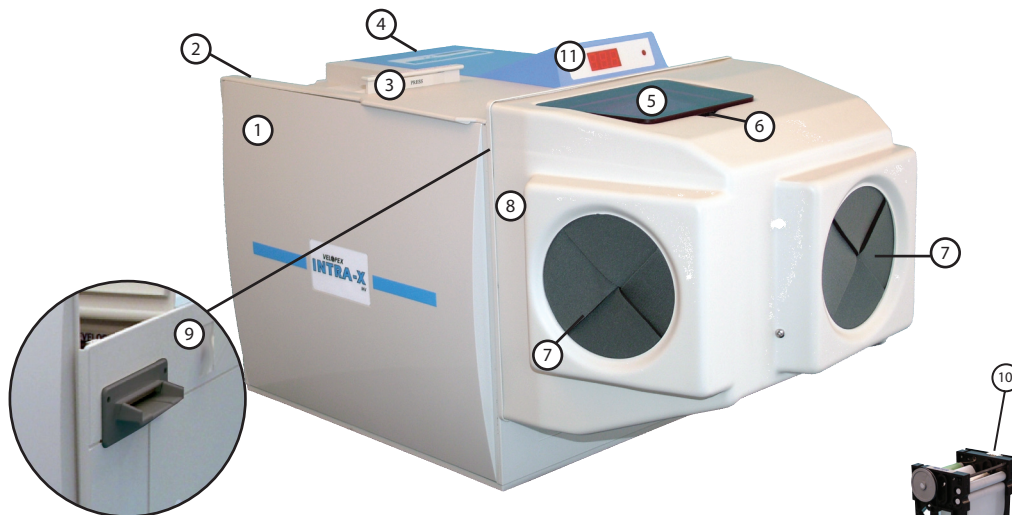
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DIAGRAMS

ERROR CODES

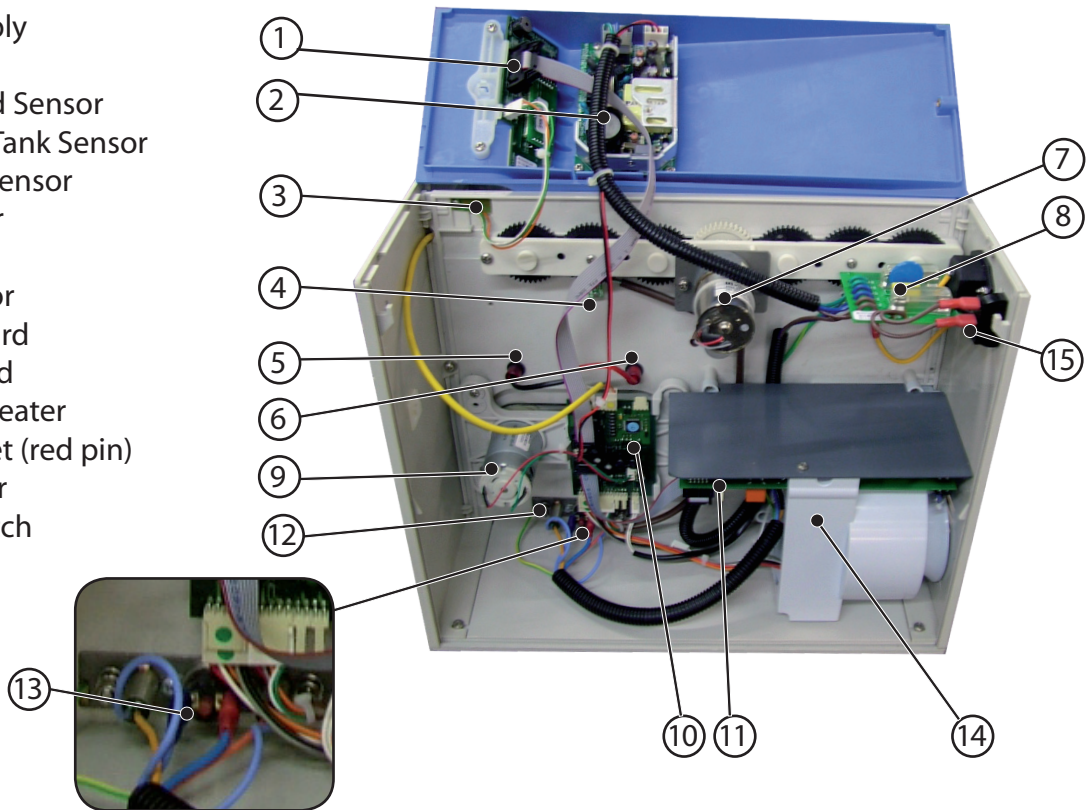
Machine Exterior



- ① Velopex X-Ray Film Processor - Left Side
- ② Film Collector
- ③ Endo Slide
- ④ On/Off Power Switch
- ⑤ Viewer Cover
- ⑥ Daylight Loader viewing Window
- ⑦ Hand entry port/Glove
- ⑧ Daylight Loader - Left Side
- ⑨ Film Entry Guide
- ⑩ Transport Module
- ⑪ Display

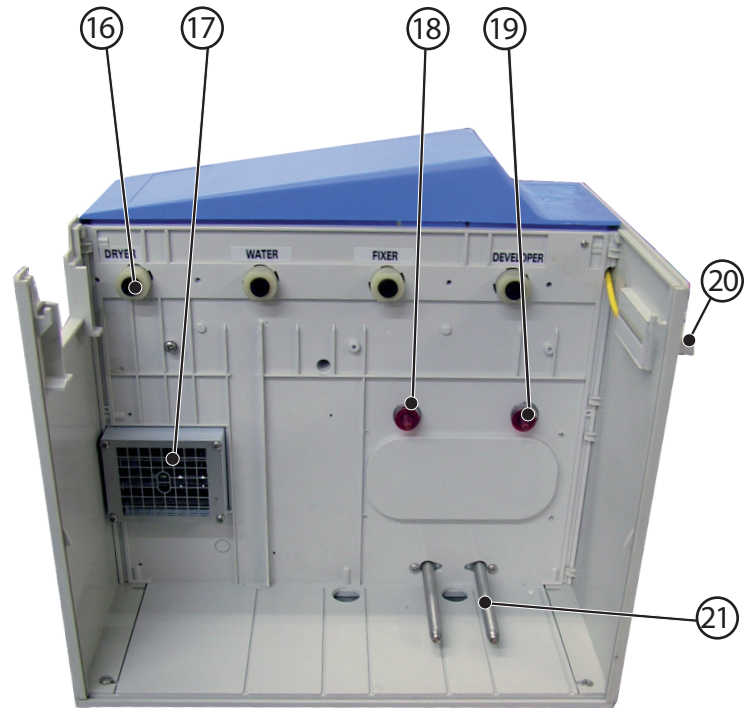
Machine Interior

- 1 Display Board
- 2 Power Supply
- 3 Lid Sensor
- 4 Drive Speed Sensor
- 5 Developer Tank Sensor
- 6 Fixer Tank Sensor
- 7 Drive Motor
- 8 IEC Board
- 9 Stirrer Motor
- 10 Control Board
- 11 Power Board
- 12 Cartridge Heater
- 13 Heater Reset (red pin)
- 14 Dryer Motor
- 15 On/Off Switch



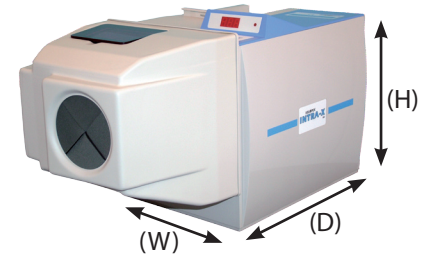
Machine Interior

- 16 Drive Dogs (x4)
- 17 Heater Grill Assembly with Sensor
- 18 Fixer Sensor
- 19 Developer Sensor
- 20 Film Entry Guide with Initiation Sensor
- 21 Cartridge Heater



Machine Specification

Width (W)		290mm / 11½"
Depth (D)		435mm / 17"
	Inc. Loader	635mm / 25"
Height (H)		315mm / 12½"
Weight:	Empty	9.5Kg / 21lb
	Full Tanks	13.7Kg / 30lb
Tank Capacity		1.4litres / 2½Imp Pints each
Operating Temperature:		Water - <i>should not exceed</i> 28°C (82.4°F)
	Developer	25°C (77°F) / 30°C (86°F)
	Fixer	27.5°C (81.5°F) / 33°C (91.4°F)
Electric Supply		100-120V, 200-240V, 50 60Hz
Warm-up time		10 min. approx.
Film Feed Speed		470mm / 18½" per min.
Max film width		65mm / 2½"
Processing time: Dry		4.5 min. approx.
	Wet-Endodontic	2.5 min. approx.
Input Power		1000W
Environmental Conditions:		Indoor use only
Environment Temperature		5°C-26°C (41°F-78.8°F)
Maximum Relative Humidity:		80%



Pre-Installation Instructions

• Siting of the VELOPEX

When using the machine in daylight or a darkroom, avoid sources of intense light. Do not mount the unit under a window, fluorescent light or flood lamp.



IMPORTANT NOTE: A well ventilated position is mandatory.

The ambient temperature must be below 26°C (78.8°F).

NB: If the machine has been shipped or stored in excessive heat, allow time for it to cool to below 26°C (78.8°F) before installation. Temperatures above 57°C will cause an E14 safety message.

Prevent siting the machine above or near other electrical or mechanical equipment. Surfaces susceptible to water or chemical damage should be avoided, such as carpeted areas.

1. COUNTER

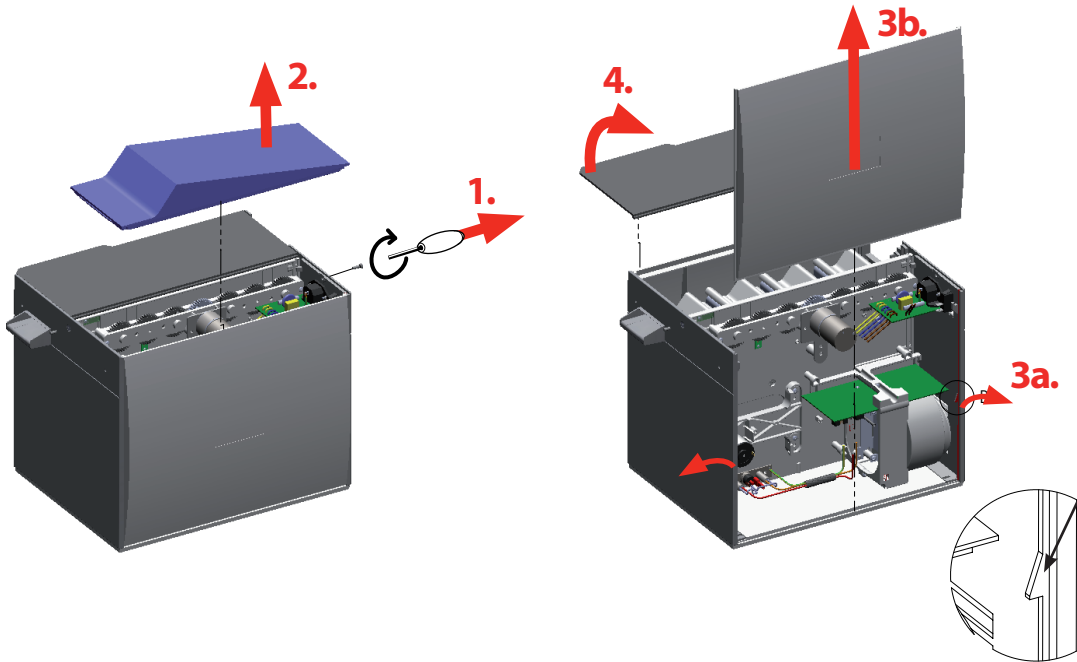
- a. Use a stable and level counter that will support a weight of at least 50 Kg (100lbs).
- b. When the machine is filled with chemicals, make sure the stand does not rock or shake. NEVER move the machine with chemicals in the tanks.

2. ELECTRICAL SUPPLY

- a. Refer to specification table, page 4.
- b. The power source must be within one metre (3 feet) of the machine. It should be easily accessible for operation and maintenance.

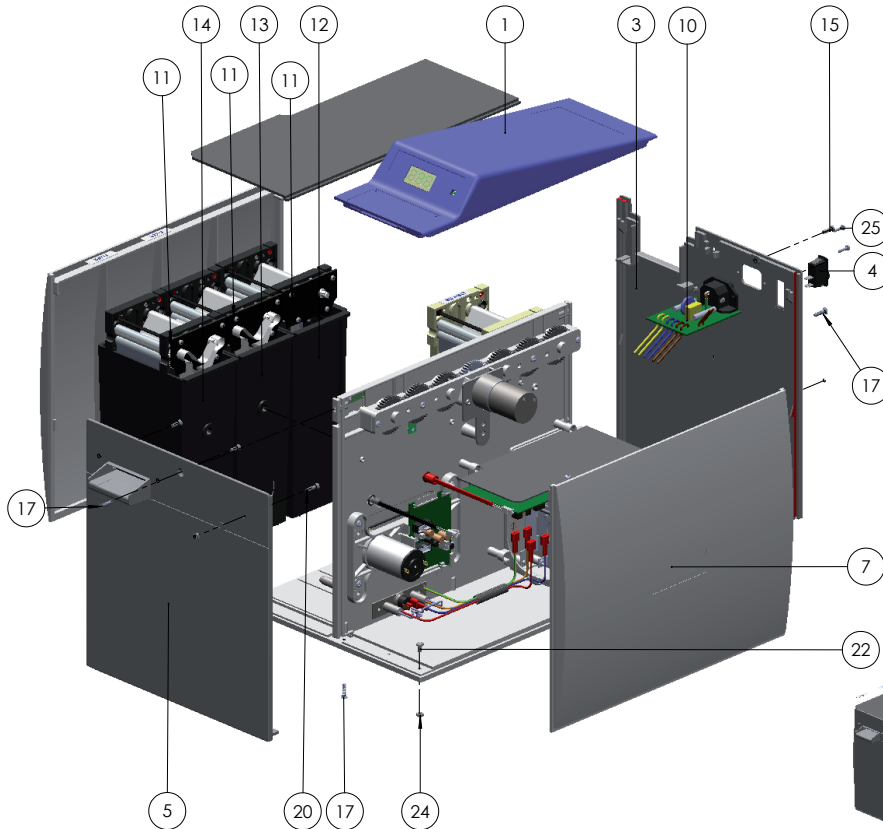
Opening Machine

DIAGRAMS



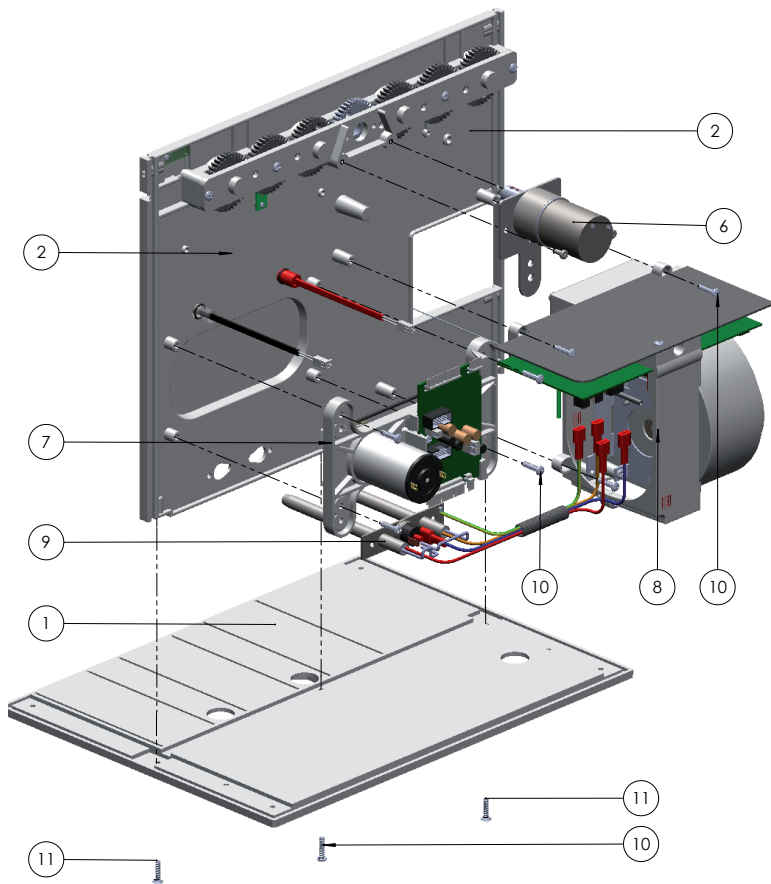
To remove the side panel, spring out the Front and Back panel to release the catch.

Main Assembly

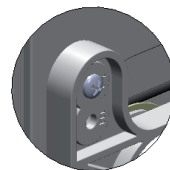


ITEM NO.	DRAWING NO. & DESCRIPTION	PART NO.	QTY	SPARES PART NO.
1	10-223-A1 CONTROL PANEL ASSEMBLY Iss3	I/ASS0223A	1	I/ASS0223F
2	INTRA Top Panel	I/ASS0247A	1	I/ASS0247F
3	10-006-A1 BACK PANEL Iss10	I/MDG2010P	1	I/MDG2010F
4	Rocker Switch - 15amp, 250vac	I/ELC7201	1	I/ELC7201F
5	10-004-A1 FRONT PANEL Iss14	I/MDG 2005P	1	I/MDG2005F
6	10-001-A1 BASE PANEL	I/MDG2000F	1	I/MDG2000F
7	11-149-A1 SIDE PANEL Iss3		2	I/MDG2065F (TANK SIDE) I/MDG2066F (CONTROL PANEL)
10	10-228-A3 IEC Board	I/ELC7206P	1	I/ELC7206F
11	MODULE		4	SEE DRAWING
12	10-180-A2 WATER TANK ASSY Iss6		1	I/ASS2178F
13	10-179-A2 FIXER TANK ASSY Iss5		1	I/ASS2177F
14	10-178-A2 DEVELOPER TANK ASSY Iss5		1	I/ASS2176F
15	M4 x 14 POZI CSK	I/FIX2066P	1	SCREW PACK I/ASS0004F
16	4x1.75x16mm PLASFIX POZI SCREW	I/FIX8109P	9	
17	4x1.75x16mm PLASFIX COUNTERSUNK SCREW	I/FIX8913P	4	
19	M4 x 12 POZI CSK	I/FIX 2056P	2	
20	M4 x 16 POZI CSK	I/FIX2071P	1	
21	M4 x 8 POZI CSK	I/FIX 2045P	1	
22	M4 x 8 POZI PAN	I/FIX 2040P	3	
23	M4 SHAKEPROOF WASHER	I/FIX2130P	1	
24	M4 FULL NUT	I/FIX 2100P	5	
25	M3 x 12 POZI PAN	I/FIX 2028P	2	
26	M3 NYLOC	I/FI X 8104P	2	

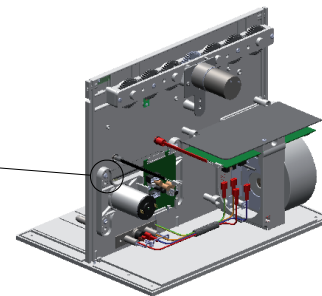
Sub Assembly



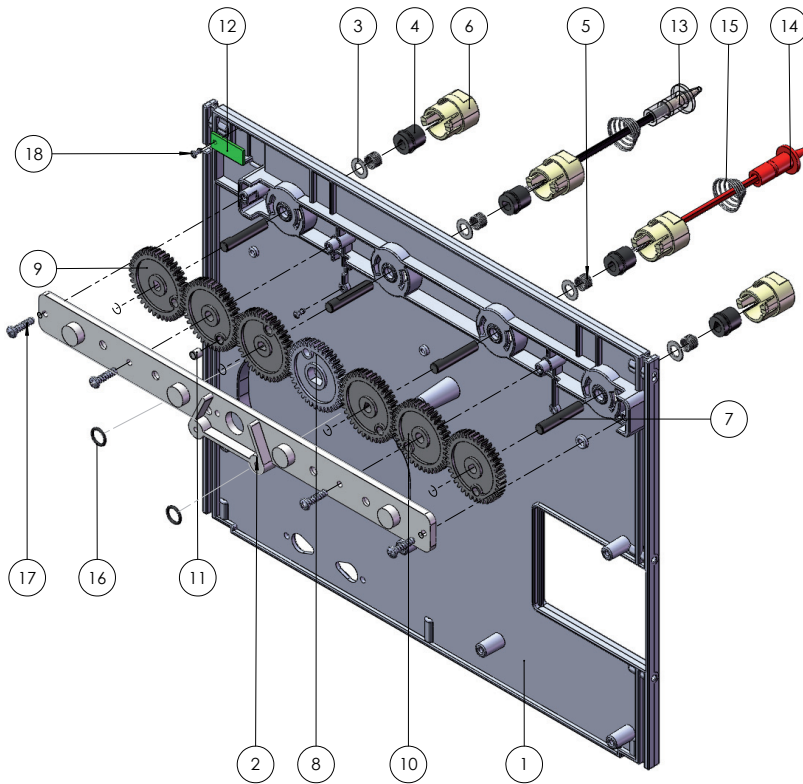
ITEM NO.	DRAWING NO. & DESCRIPTION	PART NO.	QTY	SPARES PART NO.
1	10-001-A1 BASE PANEL	I/MDG2000P	1	I/MDG2000F
2	10-253-A3 INTRA MOTOR BOARD ASSEMBLY	I/ASS0253A	1	SEE DRAWING
6	10-252-A1 DRIVE MOTOR ASSEMBLY Iss2	I/ASS0251A	1	I/ASS0252F
7	10-251-A3 STIRRER MOTOR ASSEMBLY Iss5	I/ASS0251A	1	SEE DRAWING
8	10-250-A1 CASSETTE ASSEMBLY Iss3	I/ASS0250A	1	
9	10-034-A3 TWIN HEATER ASSY	I/ELC2098P	1	I/ELC2098F
10	4x1.75x16mm PLASFIX POZI SCREW	I/FIX8109P	9	SCREW PACK I/ASS0004F
11	4x1.75x16mm PLASFIX COUNTERSUNK SCREW	I/FIX8913P	5	
12	M4 x 14 POZI CSK	I/FIX2066P	1	



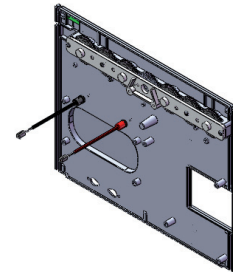
MOUNTING
I = INTRA
E = EXTRA



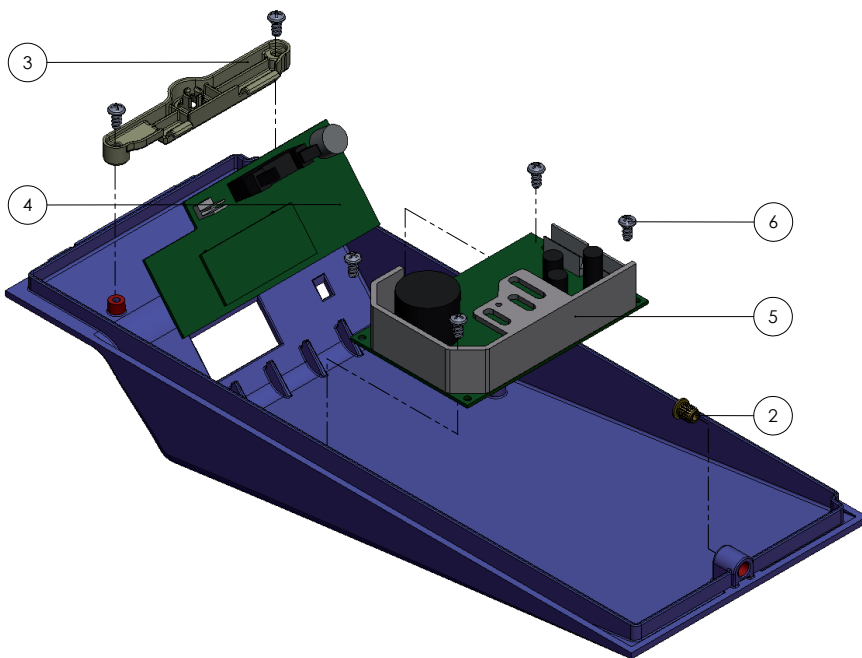
Motor Board Assembly



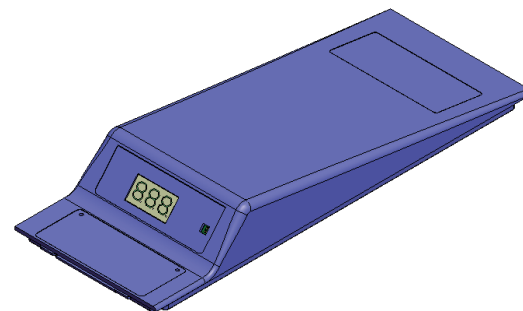
ITEM NO.	DRAWING NO. & DESCRIPTION	PART NO.	QTY	SPARES PART NO.
1	10-216-A1 INTRA MOTOR BOARD	I/MDG0038P	1	I/MDG0038F
2	10-016-A3 MOTOR BOARD GEAR STRIP	I/MDG2137P	1	
3	M6 Plain Washer - ID 6.3 x OD 12 x .75	I/FIX2120P	4	
4	10-060-A3 DRIVE DOG Iss6	I/MDG2200P	4	I/ASS5206F
5	11.2x7mm DIA COMPRESSION SPRING	I/SPR2000P	4	
6	11-277-A3 BAYONET DRIVE BUSH	I/MDG0014P	4	
7	10-079-A4 DRIVE PIN Iss5	I/MDG2130P	4	
8	11-274-A3 DRIVE GEAR 39T Iss1	I/MDG0010P	1	
9	10-027-A3 MODULE GEAR 39T Iss4	I/MDG2125P	4	I/ASS0007F
10	11-276-A3 IDLE GEAR 39T Iss2	I/MDG2115P	2	
11	5x5 magnet	I/FIT9900P	1	
12	10-229-PCB Hall Effect	I/ELC1022P	1	I/ELC7215F
13	10-242-A4 INTRA Dev Temp Sensor Iss5	I/ELC1105P	1	
14	10-243-A4 INTRA Fixer Temp Sensor Iss5	I/ELC1105P	1	
15	THERMISTER SPRING INTRA	I/SPR3001P	2	I/ELC1106F (DEV) I/ELC1105F (FIX)
16	8.5 ID x 1.5mm SECTION SMALL CYLINDER CAP ORING	**** NEW PART ****	2	
17	4x1.75x16mm PLASFIX POZI SCREW	I/FIX8109P	4	SCREW PACK I/ASS0253F
18	2.5x1.4x6mm Plasfix Pozil Screw	I/FIX8914P	2	
COMPLETE ASSEMBLY				I/ASS0253F



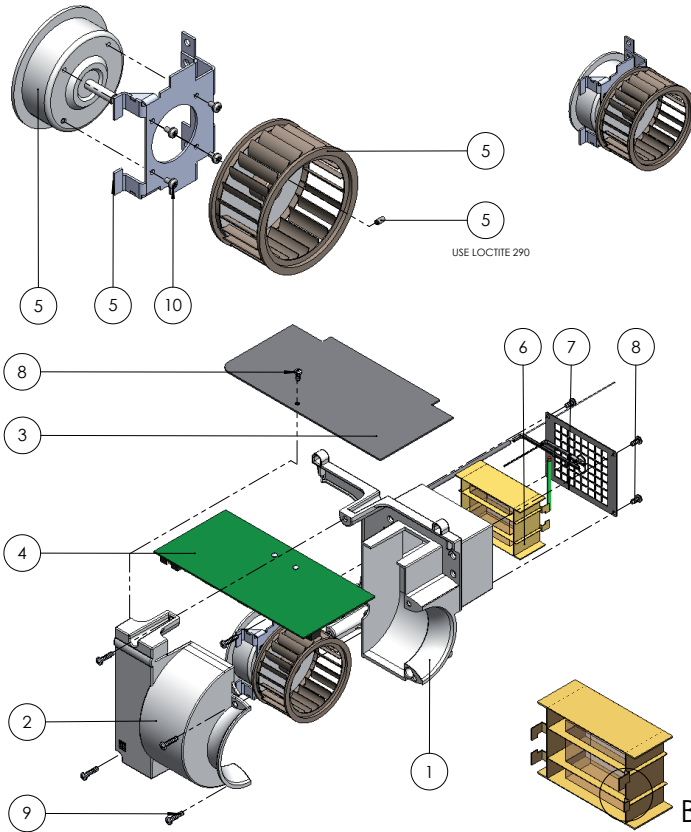
Control Panel Assembly



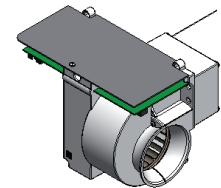
ITEM NO.	DRAWING NO. & DESCRIPTION	PART NO.	QTY	SPARES PART NO.
1	11-284-A1 CONTROL PANEL Iss6	I/MDG0028P	1	I/MDG0028F
2	M4 Multisert Single Head	I/FIX0024P	1	
3	11-286-A3 DISPLAY BOARD CLAMP Iss4	I/MDG0031P	1	I/MDG0031F
4	10-221-PCB MKS INTRA-EXTRA DISPLAY BOARD	I/ELC7226P	1	I/ELC7226F
5	MKS IN-EX POWER SUPPLY 6-AMP-12v-240v	I/ELC7211P	1	I/ELC7211F
6	4x1.75x8mm PLASFIX POZI SCREW	I/FIX8912P	6	SCREW PACK : I/ASS0004F
COMPLETE ASSEMBLY				I/ASS0223F



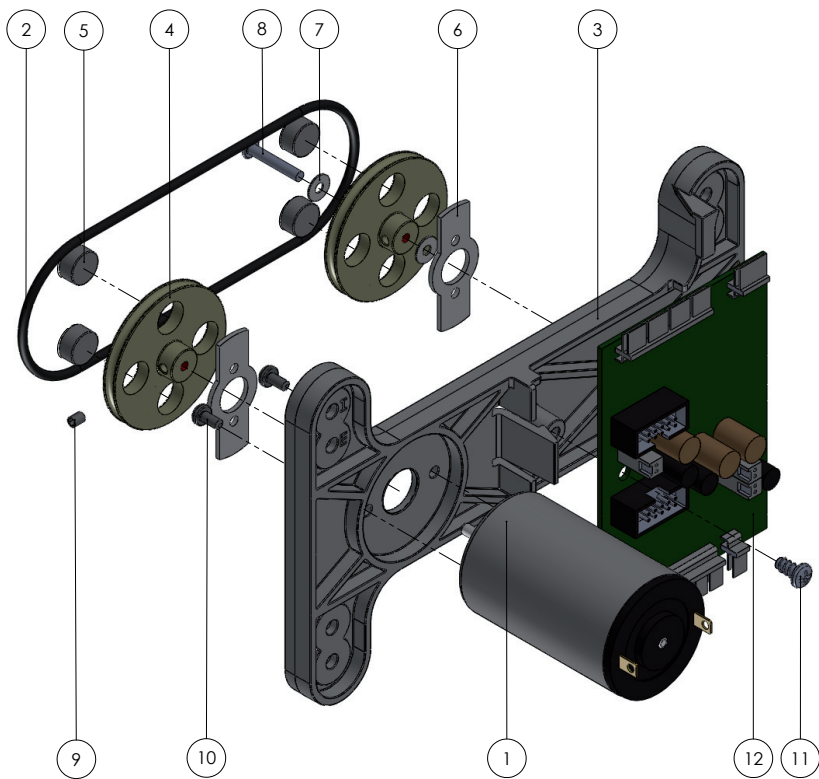
Dryer Module Assembly



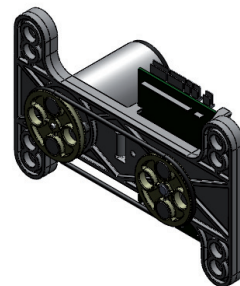
ITEM NO.	DRAWING NO. & DESCRIPTION	PART NO.	QTY	SPARES PART NO.
1	11-282-A1 DRYER CASSETTE UPPER Iss5	I/MDG0021P	1	
2	11-281-A1 DRYER CASSETTE LOWER Iss5	I/MDG0020P	1	I/ASS0005F
3	10-263-A4 Power PCB Guard ISS3	I/FIT9913P	1	
4	10-219-PCB MK6 POWER BOARD	I/ELC7225P	1	I/ELC7225F
5	10-249-A3 FAN MOTOR ASSEMBLY	I/ASS0249A	1	I/ASS0249F
6	Dryer Element 2X115V	I/ELC2700P	1	I/ELC2700F
7	11-293-A3 DRYER GRILL ASSEMBLY Iss6	I/ASS1293A	1	I/ASS1293F
8	4x1.75x8mm PLASFIX POZI SCREW	I/FIX8912P	5	
9	4x1.75x16mm PLASFIX POZI SCREW	I/FIX8109P	6	SCREW PACK I/ASS0004F
10	M3 x 5 POZI PAN	I/FIX8116P	4	
COMPLETE ASSEMBLY			1	I/ASS0250F



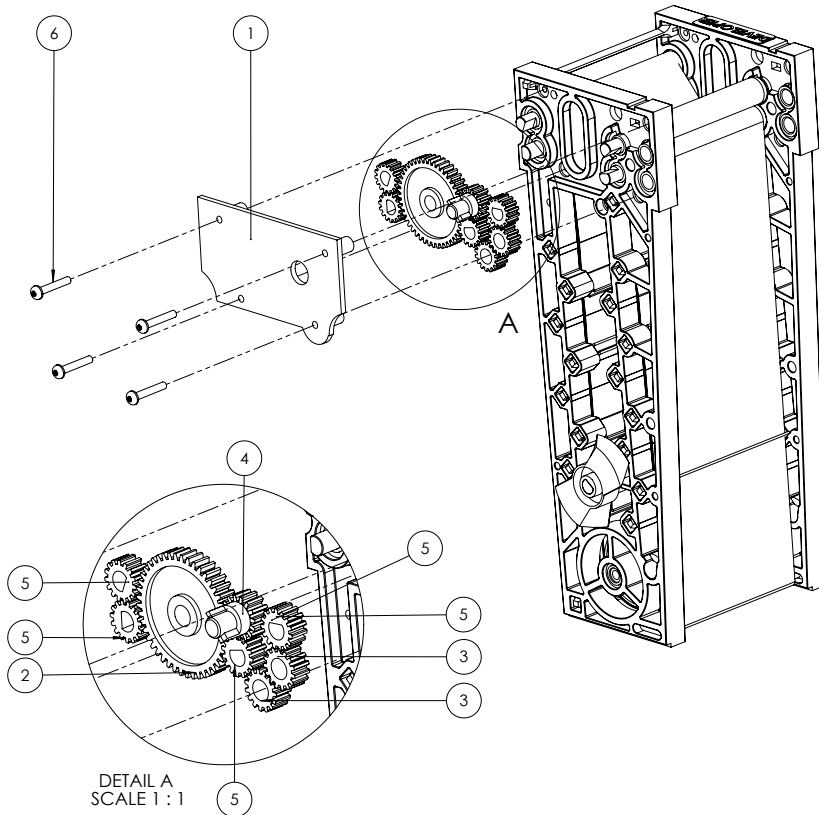
Stirrer Motor Assembly



ITEM NO.	DRAWING NO & DESCRIPTION	PART NO.	QTY	SPARE PART NO
1	24V DC UNGEARED	I/ELC7223P	1	I/ELC7223F
2	STIRRER DRIVE BELT	I/FIT0006P	1	I/FIT0251F
3	10-259-A3_Stirrer Motor Mount_Iss4	I/MDG 0062P	1	
4	11-283-A3 STIRRER MAGNET CARRIER Iss5	I/MDG0023P	2	
5	10x5 magnet	I/FIT0091P	4	
6	10-210-A4 STIRRER PADDLE PLATE	I/FIT 0090P	2	
7	PTFE Washer - ID 3 x OD 8	I/FIX 1025P	2	
8	3mm Flat Head Rivet	I/FIX0025P	1	
9	M3 x 4 Socket Set Screw	I/FIX2038P	1	
10	M3 x 6 POZI PAN	I/FIX 2029P	2	SCREW PACK I/ASS0004F
11	4x1.75x8mm PLASFIX POZI SCREW	I/FIX8912P	1	
12	10-220-PCB MK6 INTRA-EXTRA CONTROL BOARD	I/ELC7231P	1	I/ELC7231F
COMPLETE ASSEMBLY EXC CONTROL BOARD				I/ASS0251F



Transport Module



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	SPARES PART NO.
1	10-012-A2 GEAR PLATE	I/MDG0077 P	1	I/MOD0100F
2	10-029-A4 SPUR GEAR 45T	I/MDG0050 P	1	
3	10-025-A4 SPUR GEAR 15T	I/MDG0045 P	2	
4	10-023-A3 EXTENDED SPUR GEAR "D" 15T	I/MDG0035 P	1	
5	10-024-A4 SPUR GEAR "D" 15T	I/MDG0040 P	4	
6	M3 x 18 POZI PAN	I/FIX2036P	4	

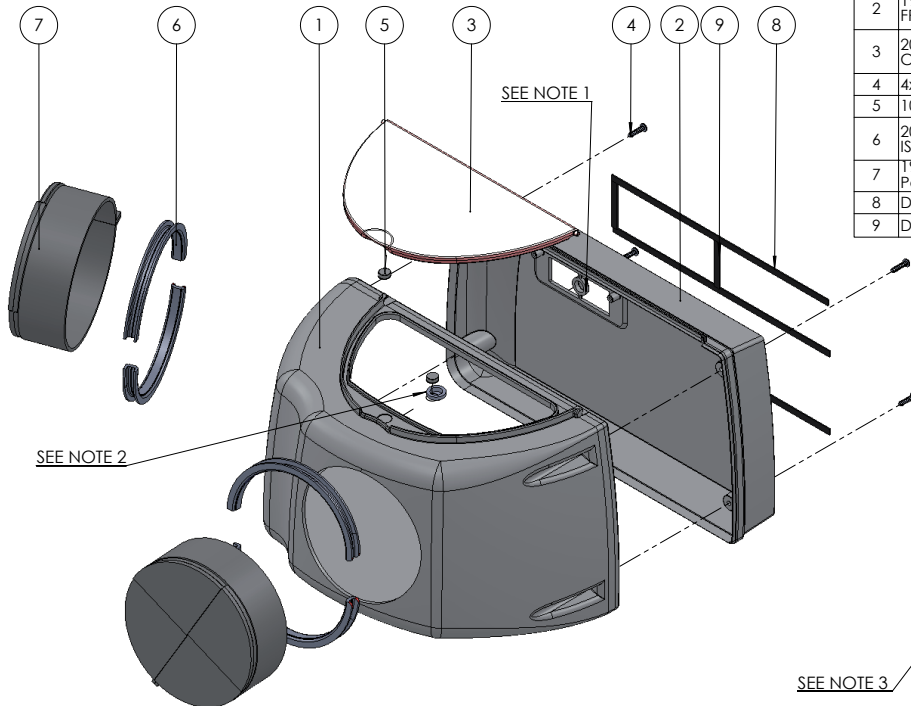
COMPLETE MODULE	
DRYER	I/MOD0083F
WATER	I/MOD0082F
FIXER	I/MOD0081F
DEVELOPER	I/MOD0080F



Daylight Loader

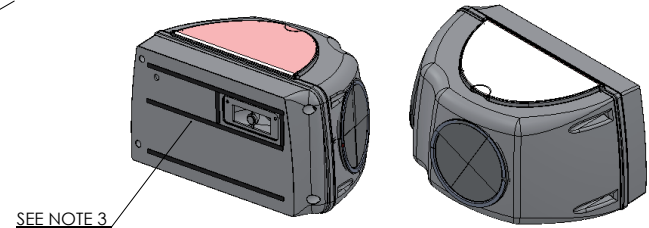
NOTES

1. TRIM TO REMOVE MAGNET CARRIER.
2. USE SUPERGLUE TO ATTACH TO LOADER FRONT.
3. USE DOUBLE SIDED 6X0.8 FOAM TO ATTACH TO FRONT PANEL OF MACHINE.

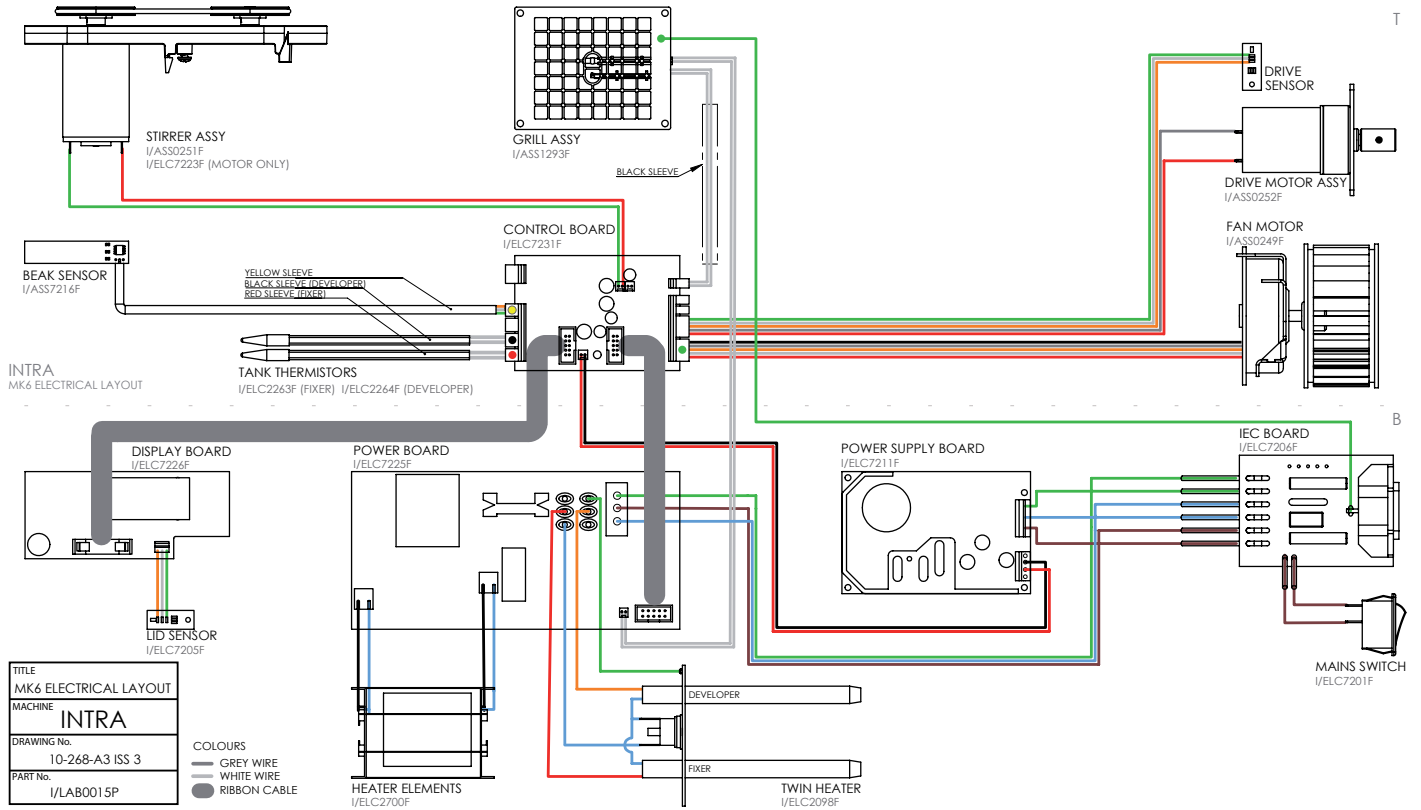


ITEM NO.	DRAWING NO. & DESCRIPTION.	PART NO.	QTY.	SPARES PART NO.
1	19-014-5-A1 DAYLIGHT LOADER FRONT-BACK ISS 3	I/MDG3022P	1	
2	19-014-5-A1 DAYLIGHT LOADER FRONT-BACK ISS 2	I/MDG3026P	1	
3	20-036-A2 LOADER DALYLIGHT TRAP COVER RED	I/MDG2036P	1	
4	4x1.75x16mm PLASFIX POZI SCREW	I/FIX8109P	4	
5	10x4 magnet	I/FIT7102P	2	
6	20-037-A2 LOADER IRIS COLLER ISSUE4	I/MDG3037P	4	I/FIT3003F (PAIR)
7	19-021-A3 Glove Assembly - Five Part	I/FIT3003P	2	
8	Double sided 250x6x0.8 foam	I/FIT3025P	3	
9	Double sided 46x6x0.8 foam	I/FIT3025P	2	
COMPLETE ASSEMBLY				I/MAC6100F

SPARES PACKING LIST			
ITEM NO.	DESCRIPTION	PART NO.	QTY
1	INTRA DAYLIGHT LOADER	I/ASS0261	1
2	TURN KNOB	I/FIT2035P	1
3	M4*1.75*16 PLASFIX POZIPAN COUNTER SUNK	I/FIX8109P	2
4	I/LIT ASSY INSTRUCTION	I/LIT9011P	1



Electrical Layout



INTRA
MK6 ELECTRICAL LAYOUT

TITLE	MK6 ELECTRICAL LAYOUT
MACHINE	INTRA
DRAWING No.	10-268-A3 ISS 3
PART No.	I/LAB0015P

- COLOURS
- GREY WIRE
 - WHITE WIRE
 - RIBBON CABLE

Error Codes

Once a fault has been corrected an Engineers Reset must be carried out.

INTRA MK6

ERROR CODE	DESCRIPTION	TECHNICAL ENGINEER				
		ACTION 1	ACTION 2	ACTION 3	ACTION 4	ACTION 5
E03	Dryer temperature sensor s/c	Disconnect, clean contacts and reconnect Dryer sensor	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Grille	Replace Control Board		
E04	Dryer temperature sensor o/c or connection to Main PCB	Disconnect, clean contacts and reconnect Dryer sensor	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Grille	Replace Control Board		
E05	Fixer temperature sensor s/c	Disconnect, clean contacts and reconnect Fixer sensor	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Sensor	Replace Control Board		
E06	Fixer temperature sensor o/c	Disconnect, clean contacts and reconnect Fixer sensor	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Sensor	Replace Control Board		
E07	Developer temperature sensor s/c	Disconnect, clean contacts and reconnect Developer sensor	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Sensor	Replace Control Board		
E08	Developer temperature sensor o/c	Disconnect, clean contacts and reconnect Developer sensor	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Sensor	Replace Control Board		
E10	Fan Sensor Inactive	Disconnect, clean contacts and reconnect Fan Motor	Check Fan unit is not jammed or rubbing with cassette	Replace Fan unit	Replace Control Board	
E11	Drive turns count not zero	Switch off and on	Check gear train is not jammed or overloaded	Check Drive Speed Sensor	Replace Control Board	
E12	Drive motor overloaded	Check that modules are clean: gears and belts	Check gear train is not overloaded			

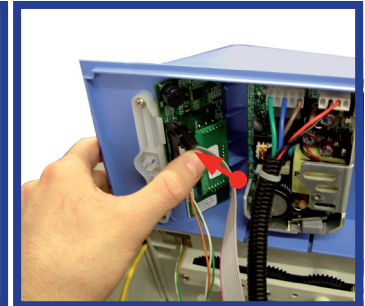
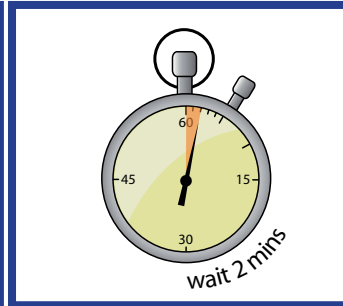
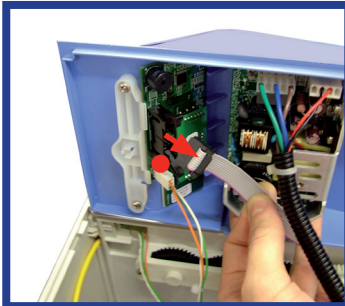
Error Codes

INTRA MK6

ERROR CODE	DESCRIPTION	TECHNICAL ENGINEER				
		ACTION 1	ACTION 2	ACTION 3	ACTION 4	ACTION 5
E13	Transport motor Sensor Inactive or Modules seized	Check that modules are clean: gears and belts	Disconnect, clean contacts and reconnect Drive Motor	Check gear train is not jammed or overloaded	Replace Drive Motor Assy	Replace Control Board
E14	Excessive Fixer / Developer temperature	Check that fresh chemical is not over 44°C	Check Temperature sensors are not the wrong way round.	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Sensor	Replace Control Board	Replace Power Board
E15	Dryer temperature too high	Check Fan is turning	Disconnect, clean contacts and reconnect Dryer sensor	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Sensor	Replace Power Board	
E18	Dryer power duty cycle too low	Replace Power Board				
E19	Developer level detected in an Intra Machine	Wrong display board software	Replace Display Board			
E20	Fixer Level detected for Intra Machine	Wrong display board software	Replace Display Board			
E33	Watchdog relay test failure (Low)					
E34	Watchdog relay test failure (High)	Replace Power Board				
tLO	Either Developer or Fixer tank temperature is low	Wait for correct temperature	Does Sensor Resistance = 50kΩ (at 25°C). If not Replace Sensor	Replace Control Board	Replace Chemical Heater	
tOF	Turn Off	Turn machine off and then on				
Lid	Lid switch open	Check Lid is closed properly	Check lid sensor alignment	Disconnect and reconnect Lid sensor	Replace Lid sensor	Replace Display Board

Machine Reset

ENGINEERS RESET - Once a fault has been corrected an Engineers Reset must be carried out.



1. Make sure machine is switched off and the power cable removed. Disconnect the ribbon cable.
2. Replace the Control Panel & Side Panel. Switch the machine on.
3. Wait 2 minutes and then switch the machine off.
4. Reconnect the ribbon cable. Switch on the machine to ensure everything is functioning correctly.

USER RESET -



If an error code locks a User can be instructed over the phone to hold both 'globes' on the display, which will reset the machine. If this does not correct the error a Machine Service will be required.

The machine can be reset using the User Reset a maximum of 5 times. At this point a Technical Engineer will need to assess and correct the fault. An Engineers Reset will be required to provide the user with another 5 User Resets.



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**ETL LISTED/ENREGISTRÉ ETL
CONFORMS TO/CONFORME À
UL 61010-1**

**THIS PRODUCT HAS BEEN TESTED
TO THE REQUIREMENTS OF
CAN/CSA-C22.2 No. 61010-1
SECOND EDITION INCLUDING AMENDMENT 1
OR A LATER VERSION OF THE SAME STANDARD
INCORPORATING THE SAME LEVEL OF TESTING
REQUIREMENTS. C No. 113778
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