

# C1900

## Circular chart recorder



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C1900  
circular chart recorder

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## Use of instructions



**Warning** – an instruction that draws attention to the risk of injury or death.



**Caution** – an instruction that draws attention to the risk of damage to the product, process or surroundings.



**Note** – clarification of an instruction or additional information. Information.



**Information** – further reference for more detailed information or technical details.

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It must be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process system performance leading to personal injury or death. Therefore, comply fully with all Warning and Caution notices.

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of the Technical Publications Department.

## Health and safety

To ensure that our products are safe and without risk to health, the following points must be noted:

- The relevant sections of these instructions must be read carefully before proceeding.
- Warning labels on containers and packages must be observed.
- Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
- Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
- Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
- When disposing of chemicals ensure that no two chemicals are mixed.

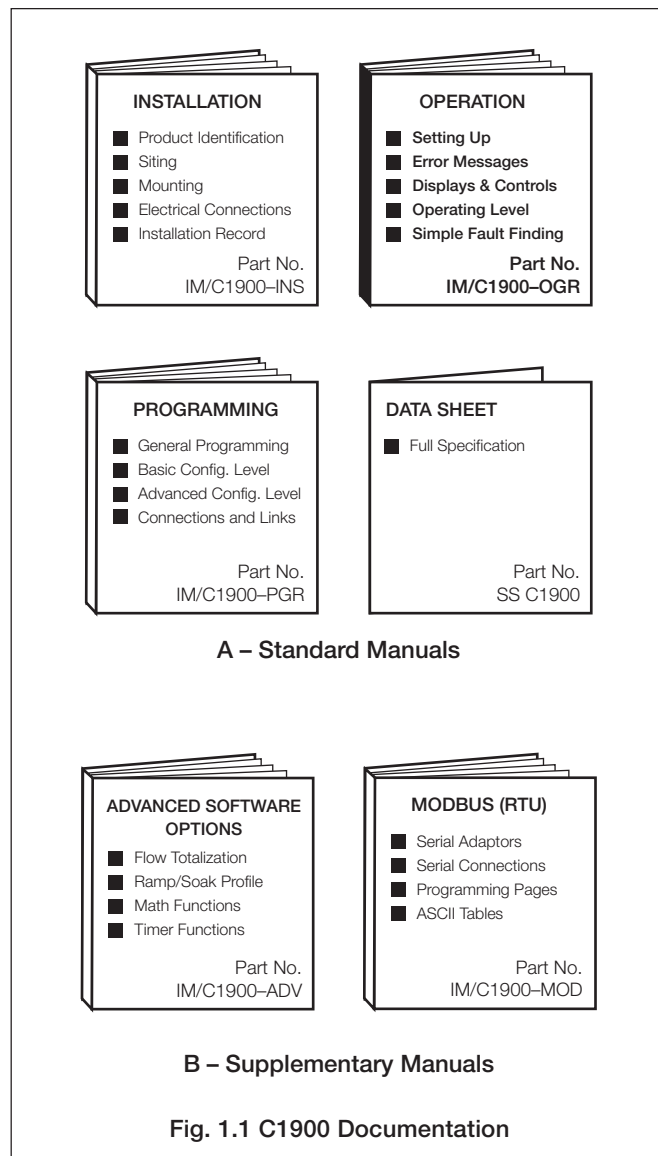
Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

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# 1 INTRODUCTION

The documentation for the C1900 series of circular chart recorders is shown in Fig. 1.1. The **Standard Manuals**, including the data sheet, are supplied with all instruments. The **Supplementary Manuals** supplied depend on the specification of the instrument.



## 2 SETTING UP

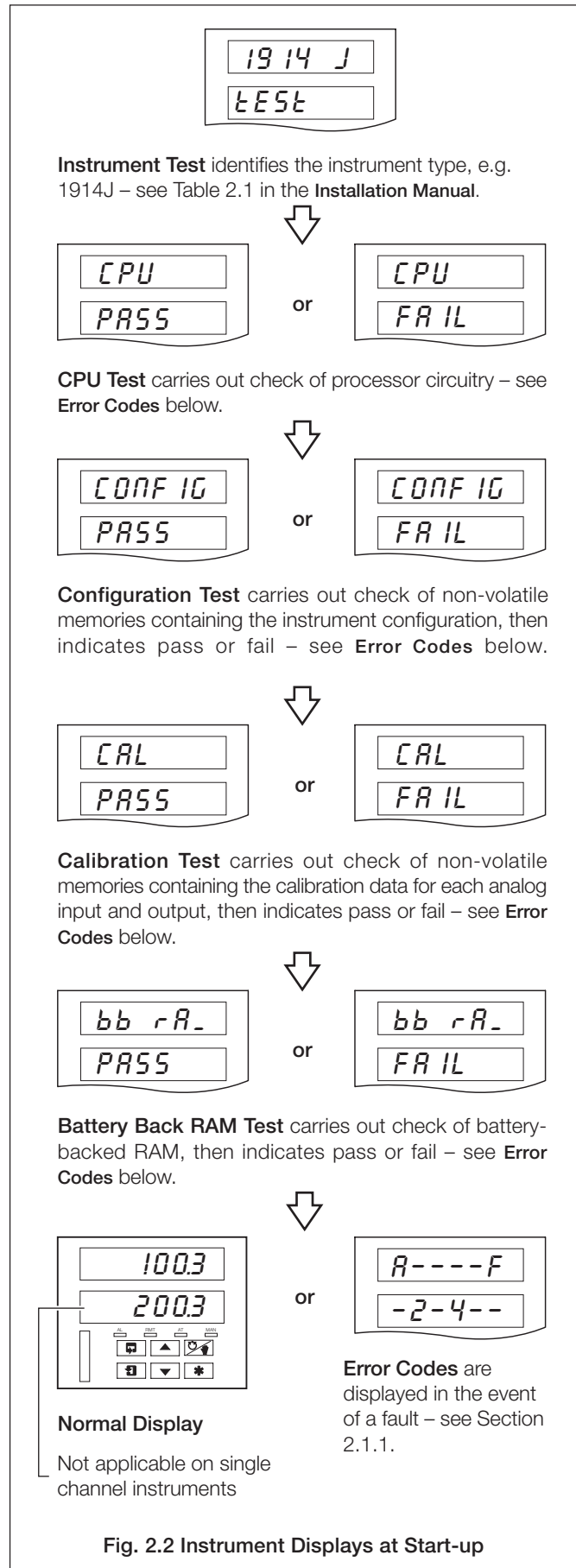
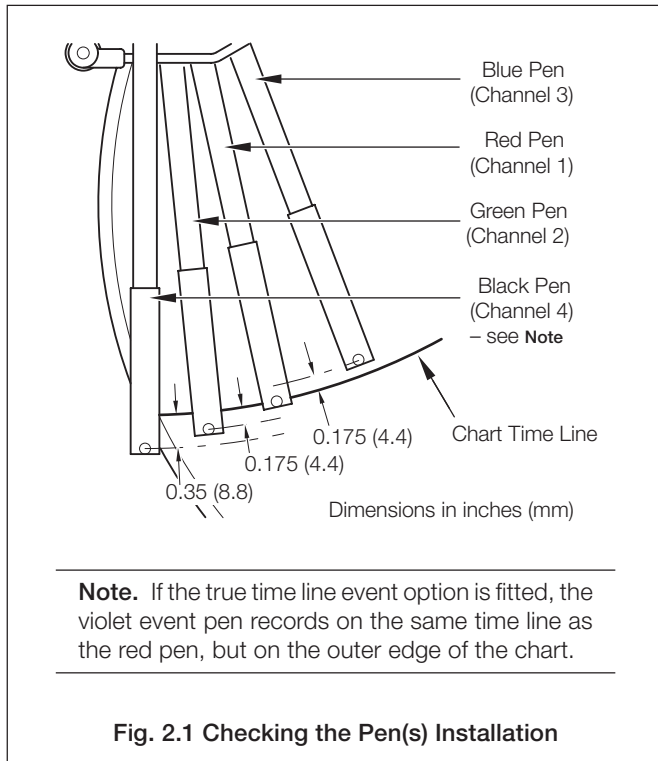
### 2.1 Instrument Power-up – Fig. 2.1 and 2.2

**Caution.** Ensure that all connections, especially to the earth stud, are made correctly.

- Check that the input sensors are installed correctly.
- Check that the pen(s) are installed correctly – see Fig. 2.1.
- Switch on the supply to the instrument, any power-operated control circuits and the input signals. Wait for the pens to settle.

**Note.** On power-up, the pens are moved to an off-chart position for automatic referencing. Pen chatter may occur on those pens nearest the reference position. **This is a normal function of the instrument.**

- The start-up sequence shown in Fig. 2.2 is displayed on faceplate 1 when the supply is first switched on.



**2.1.1 Power-up Error Codes**

If any of the power-up tests fail (see Fig. 2.2), error codes are displayed to identify the fault. Refer to Fig. 2.3 for error code interpretations.

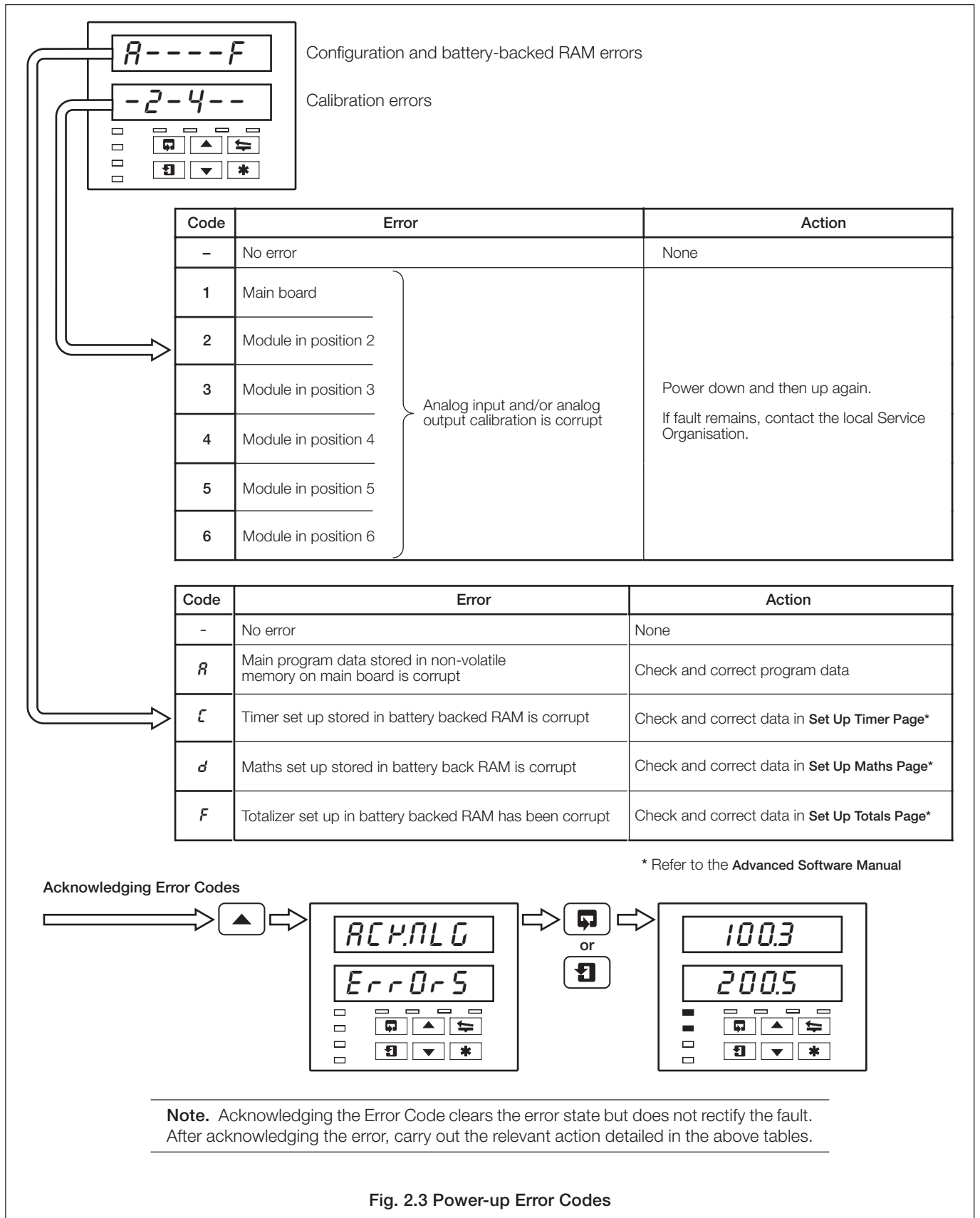
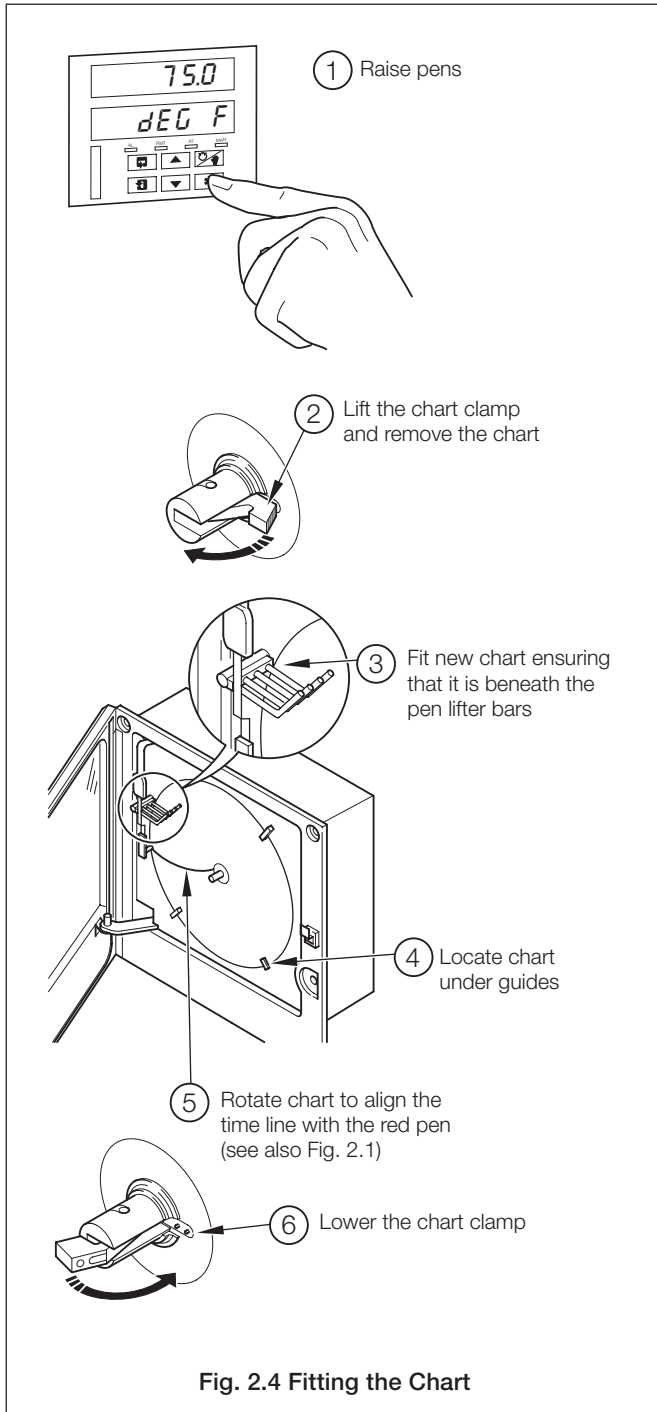
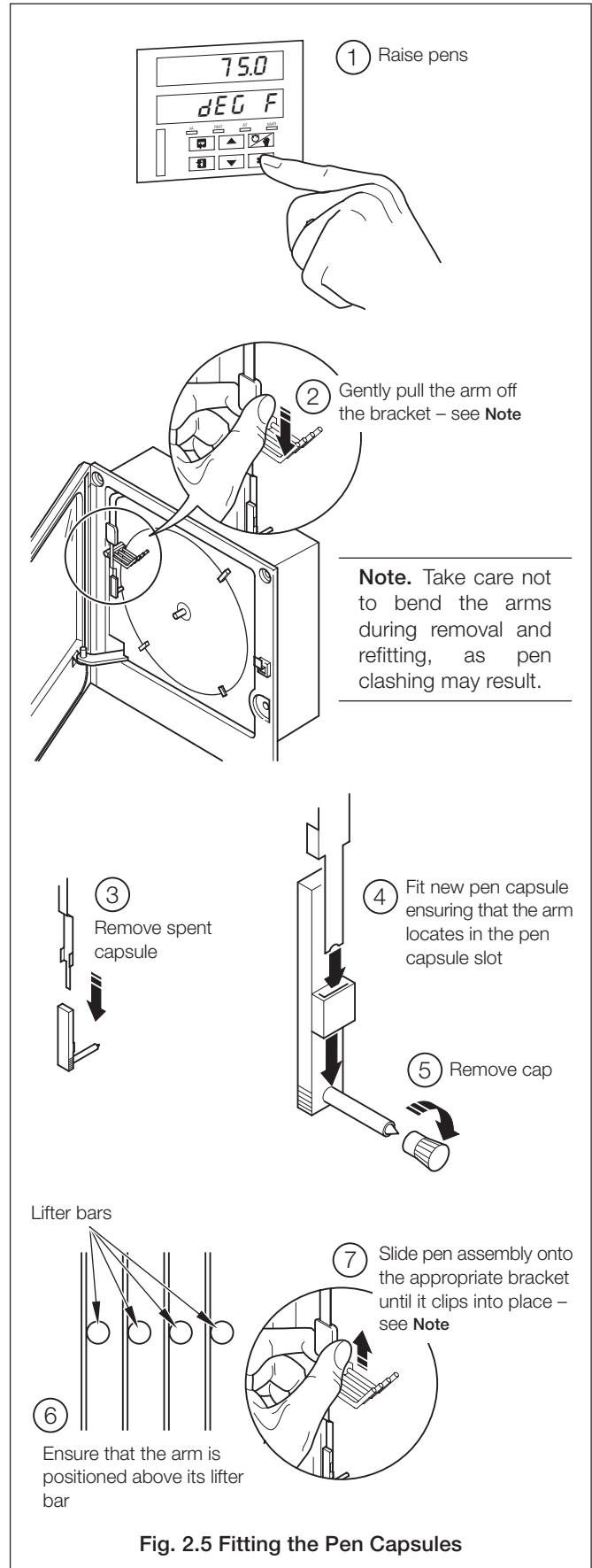


Fig. 2.3 Power-up Error Codes

2.2 Fitting the Chart – Fig. 2.4



2.3 Fitting the Pen Capsule(s) – Fig. 2.5



### 3 DISPLAYS & CONTROLS

The displays, LED indicators and operation/programming controls are located on the faceplate on the front panel of the instrument – see Fig 3.1.

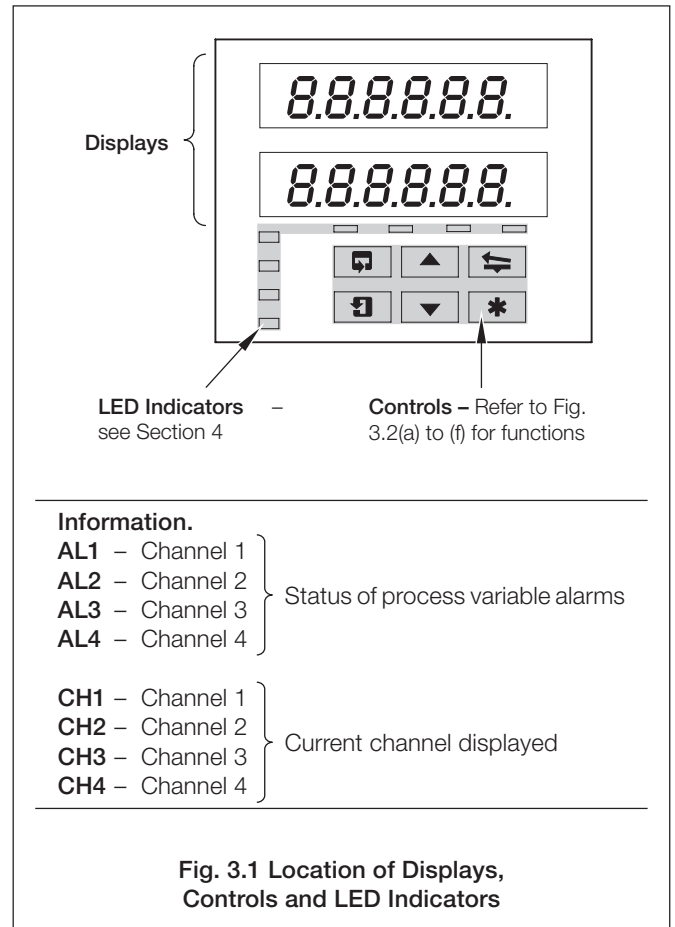
#### 3.1 Displays and LED Indicators – Fig. 3.1

The displays comprise 2 rows of 6 characters.

At the top of each programming page (the page header) both displays are used to describe the particular page selected.

When parameters within the selected page are viewed the upper display shows the parameter and the lower display shows the value or setting for that parameter.

Alarm and Channel states are indicated by separate LEDs on the faceplate of the front panel of the instrument – see Sections 4.1, 4.2 and 4.3.



**Fig. 3.1 Location of Displays, Controls and LED Indicators**

A	A	L	L
B	b	M	-
C	c or C	N	n or N
D	d	O	0 or O
E	E	P	P
F	F	Q	Q
G	G	R	r
H	H or h	S	S
I	I	T	T
J	J	U	U
K	K	V	V
		Y	Y

**Table 3.1 Character Set**

3.2 Use of Controls – Fig. 3.2(a) to (f)

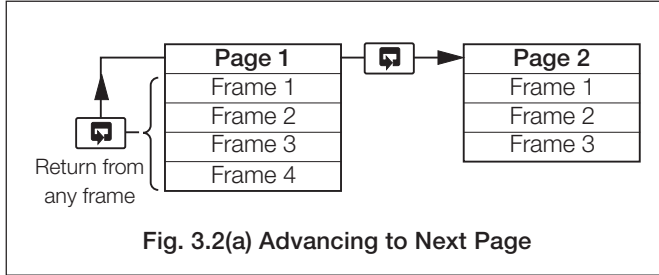


Fig. 3.2(a) Advancing to Next Page

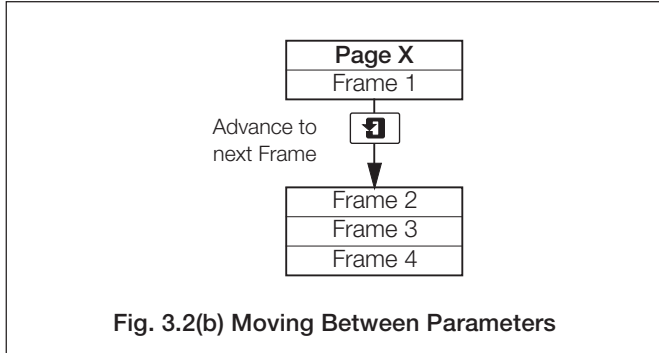


Fig. 3.2(b) Moving Between Parameters

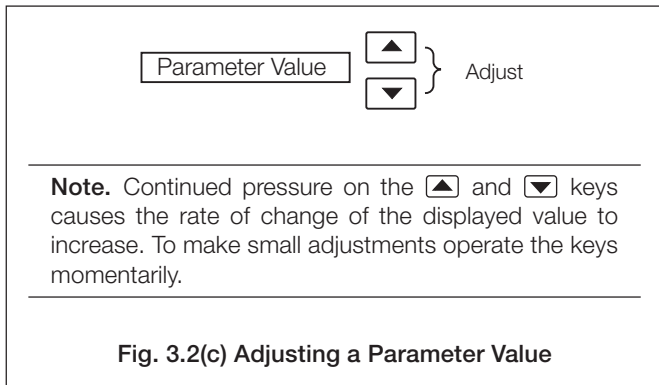


Fig. 3.2(c) Adjusting a Parameter Value

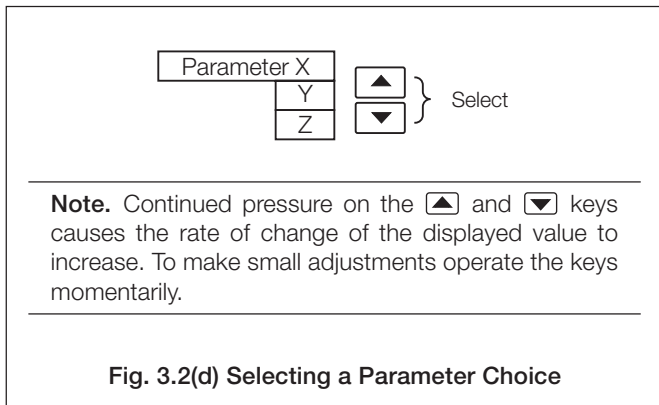


Fig. 3.2(d) Selecting a Parameter Choice

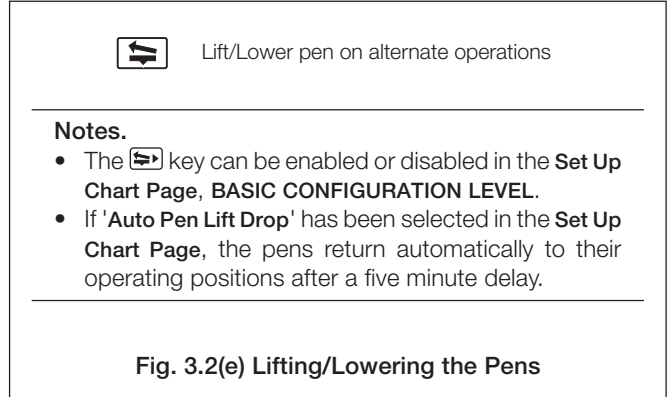


Fig. 3.2(e) Lifting/Lowering the Pens

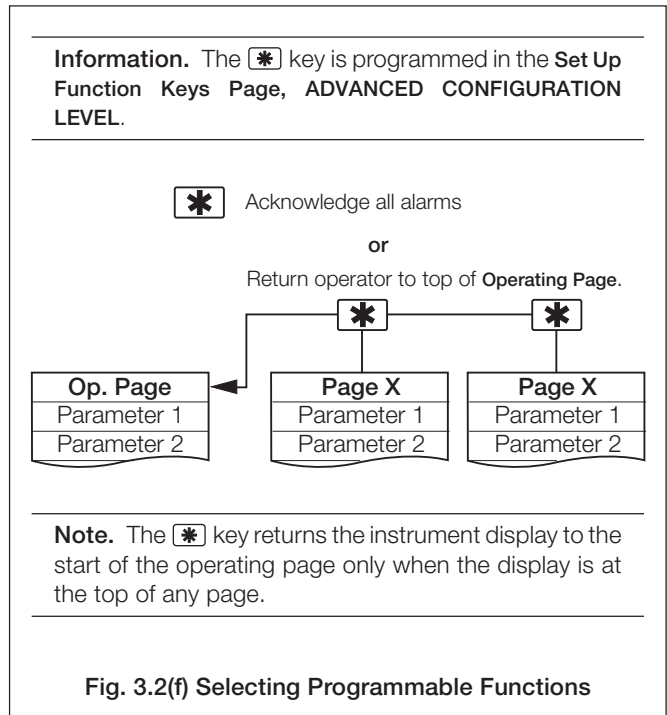


Fig. 3.2(f) Selecting Programmable Functions



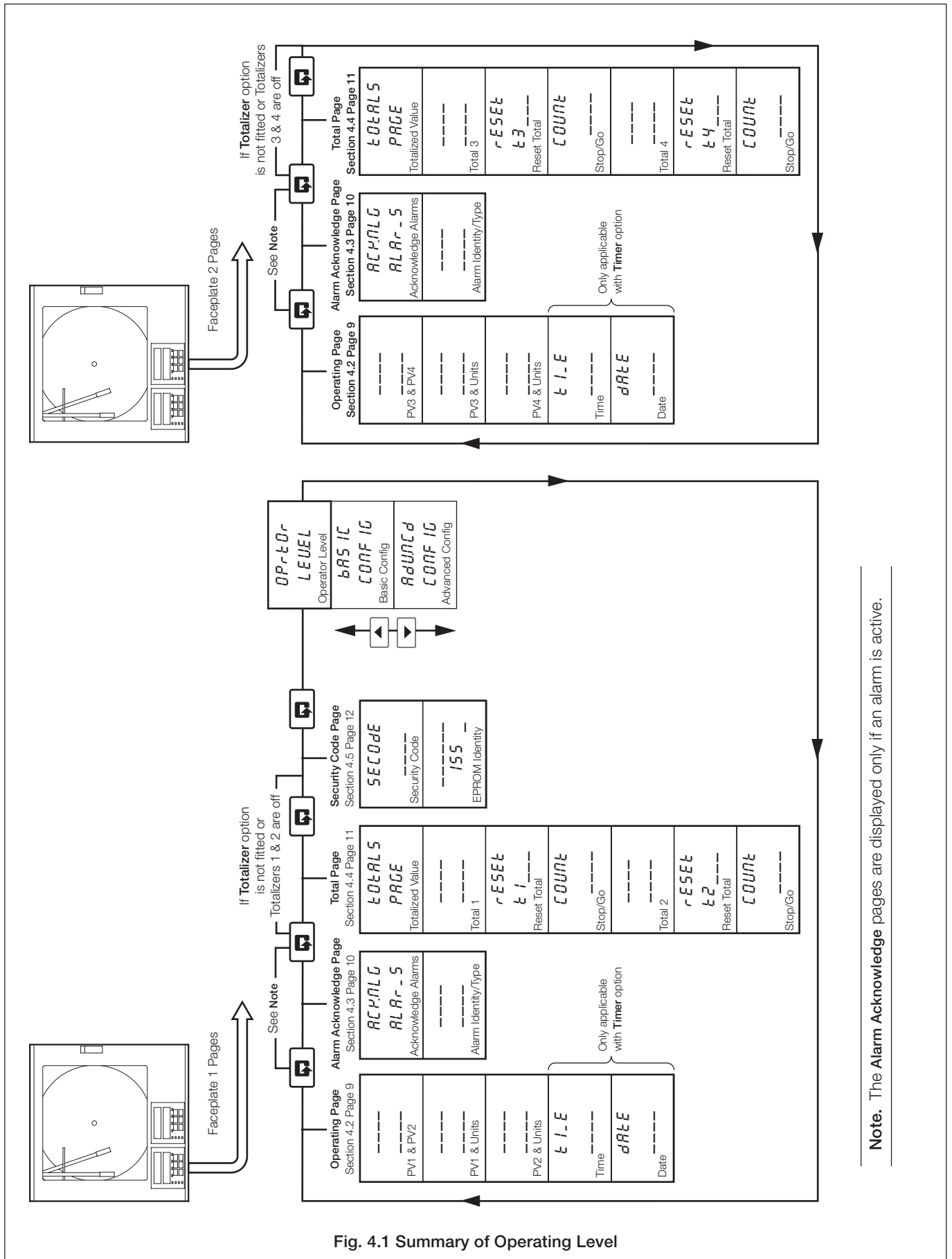
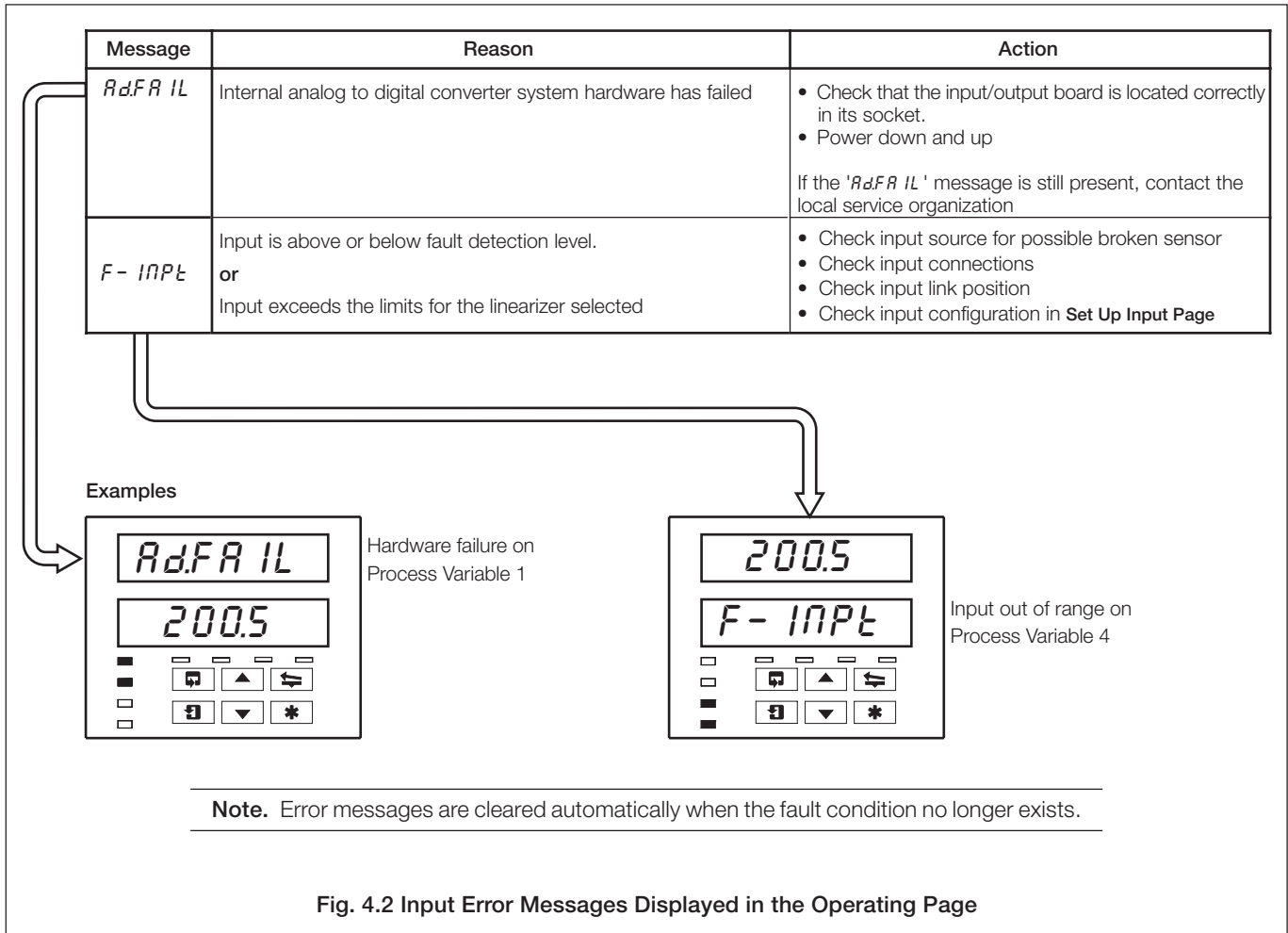


Fig. 4.1 Summary of Operating Level

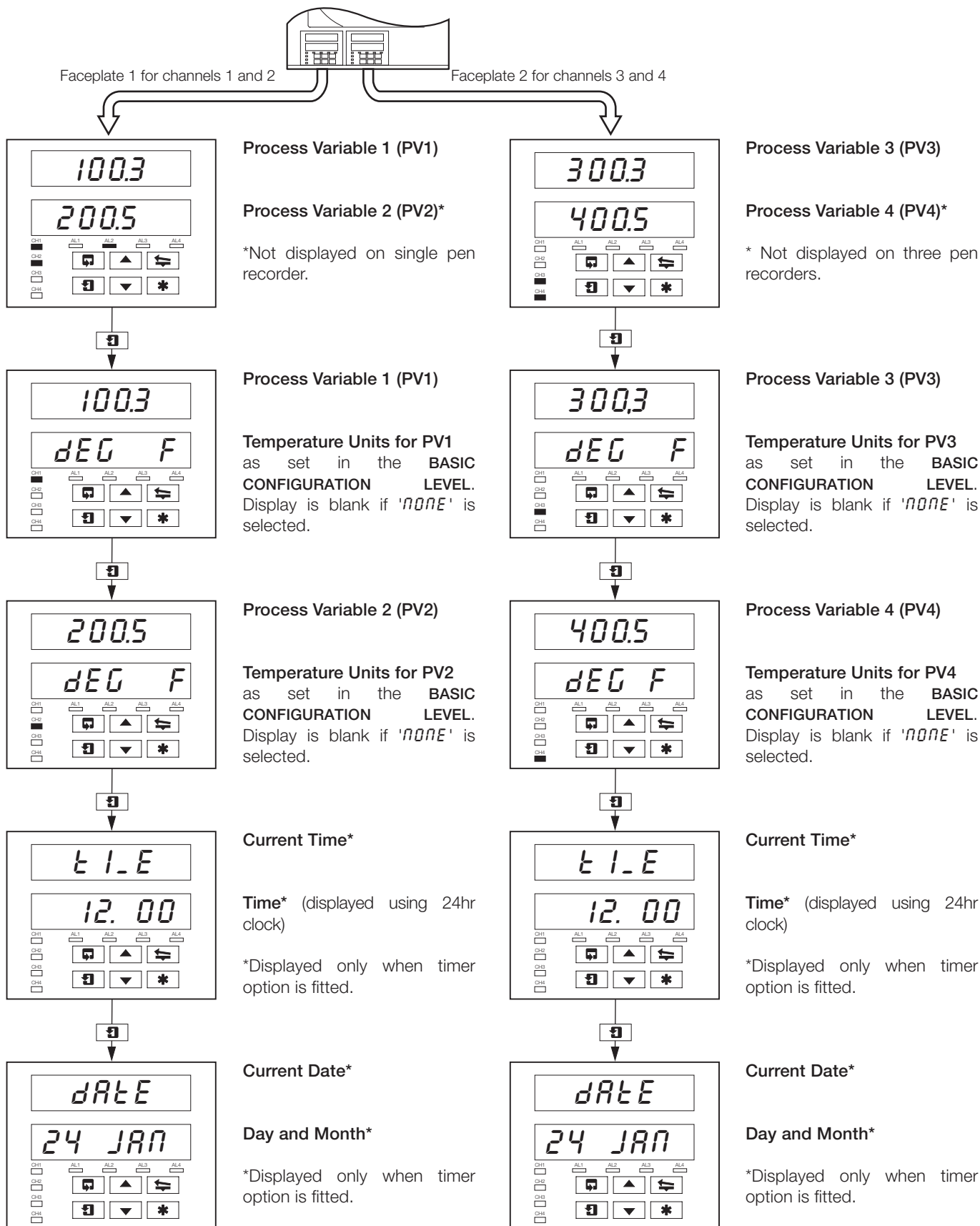
**Note.** The Alarm Acknowledge pages are displayed only if an alarm is active.

The instrument has dedicated **Operating Pages** in the **OPERATOR LEVEL** – see Sections. 4.1 to 4.4. These pages are used for general monitoring of the process measurements and are not affected by the security system which inhibits access to the **PROGRAMMING LEVELS** only – see Section 4.5 on page 12.

4.1 Input Error Messages – Fig. 4.2



4.2 Operating Page Displays



### 4.3 Alarm Acknowledge Page

#### 4.3.1 Alarm Indications – Fig. 4.3

The definitions for alarm states (on, off or flashing) are detailed in Fig. 4.3.

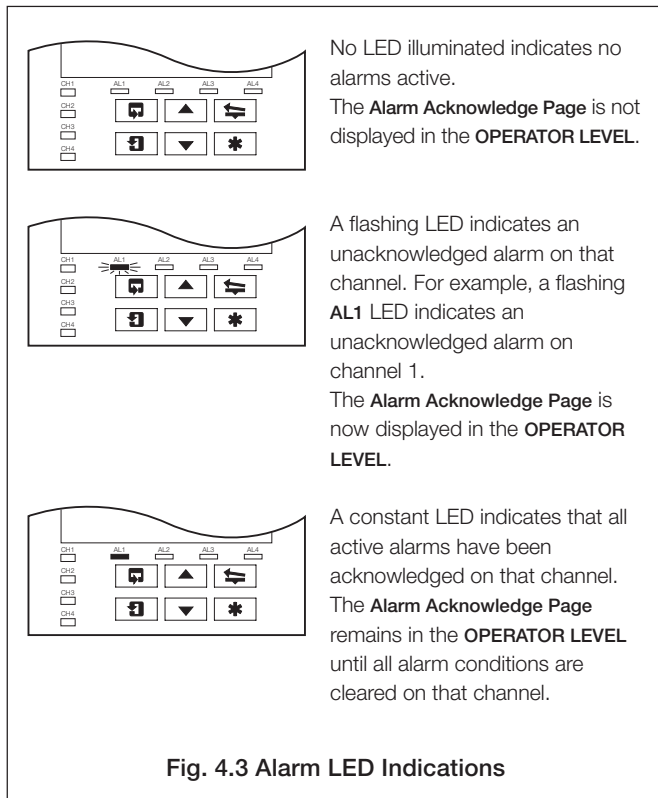
#### 4.3.2 Acknowledging Alarms

**Note.** Channel 1 and 2 alarms can be acknowledged only from faceplate 1. Channel 3 and 4 alarms (if applicable) can be acknowledged only from faceplate 2.

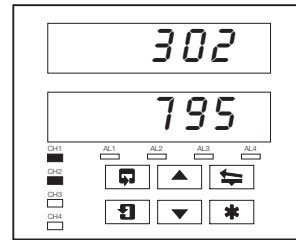
Unacknowledged alarms can be acknowledged from the faceplate controls on the front panel in two ways:

In the **OPERATING LEVEL** – by pressing the **[\*]** key at any frame (providing the key is programmed for this function – see Section 4.1 in the **Programming Manual**).

In the **Alarm Acknowledge Page** – by pressing the **[▲]** key – see Section 4.3.3 following.

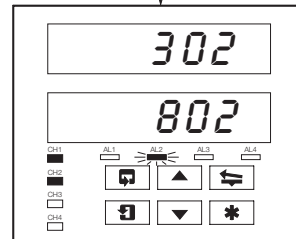


#### 4.3.3 Using the Alarm Acknowledge Page



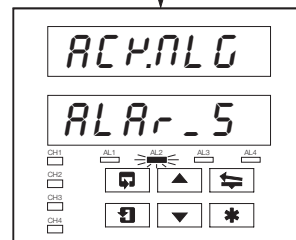
**No Alarm Active**  
No LED indicators illuminated.

Alarm Activated

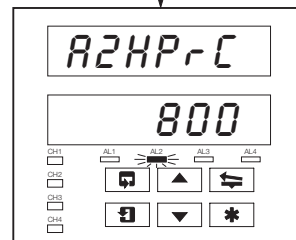


**Alarm Active**  
AL2 LED indicator flashing, indicating active alarm on channel 2.

Use **[☐]** key to go to top of Alarm Acknowledge Page.

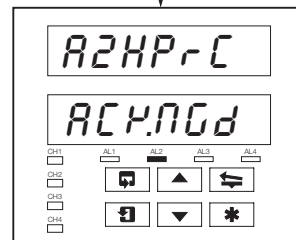


**Alarm Acknowledge Page**  
Use **[☐]** key to advance to next frame



**Alarm Identity**  
**Upper display:** shows the alarm identity and type.

**Lower Display:** shows the trip level of the alarm identified in the upper display.



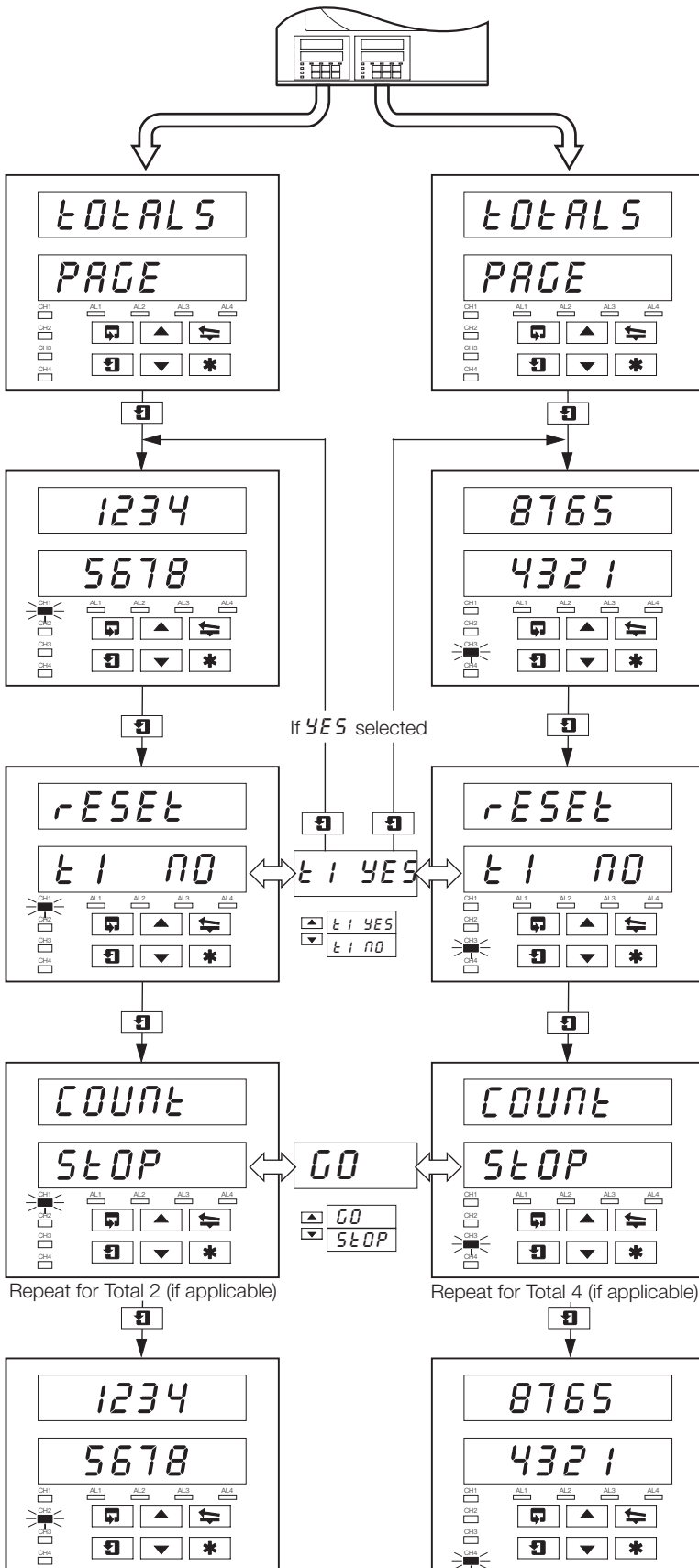
**Acknowledge Alarm**  
Use **[▲]** key to acknowledge the alarm (see). When the alarm is acknowledged, 'ACK' is displayed and a constant LED indicates the acknowledged alarm.

If there are more active alarms on channel 2 the LED continues to flash until all alarms for that channel have been acknowledged.

**Note.** The **[\*]** key or a digital input can also be used to acknowledge alarm, if programmed.

### 4.4 Totals Page Displays

This page is omitted from both faceplates if the **Totalizer Option** is not fitted. The page is also omitted from faceplate 1 if both Totals 1 and 2 are set to *OFF* and from faceplate 2 if both Totals 3 and 4 are set to *OFF* – refer to the **Set Up Totals Page** in the **Advanced Software Options Manual**.



#### Front Panel (Batch) Flow Total 1 (3)

The batch flow total is calculated from process variable 1 (3). The flow total can be reset if **Reset Enable** in **Set Up Totals Page** is set to *'ENBL-Y'*.

The flashing channel LED indicates the flow total displayed.

For example, a flashing channel 1 LED indicates **Flow Total 1** parameters displayed.

#### Counter Reset

The Front (Batch) Flow Total can be reset to the **Preset Value** in **Set Up Totals Page** if required.

Select *'t1 YES'* to reset the counter (*'t1'* indicates **Flow Total 1**).

**Note.** If the Counter Reset is disabled in **Set Up Totals Page**, the counter reset frame is omitted.

#### Counter Stop/Go

Select *'GO'* to start the counter or *'STOP'* to stop it.

**Note.** If the Counter Stop/Go is disabled in **Set Up Totals Page**, the frame can be viewed but not altered. If a digital signal is assigned to the **Totalizer Stop/Go**, an active digital signal sets the counter to *GO* and the Counter cannot be stopped from the front panel.

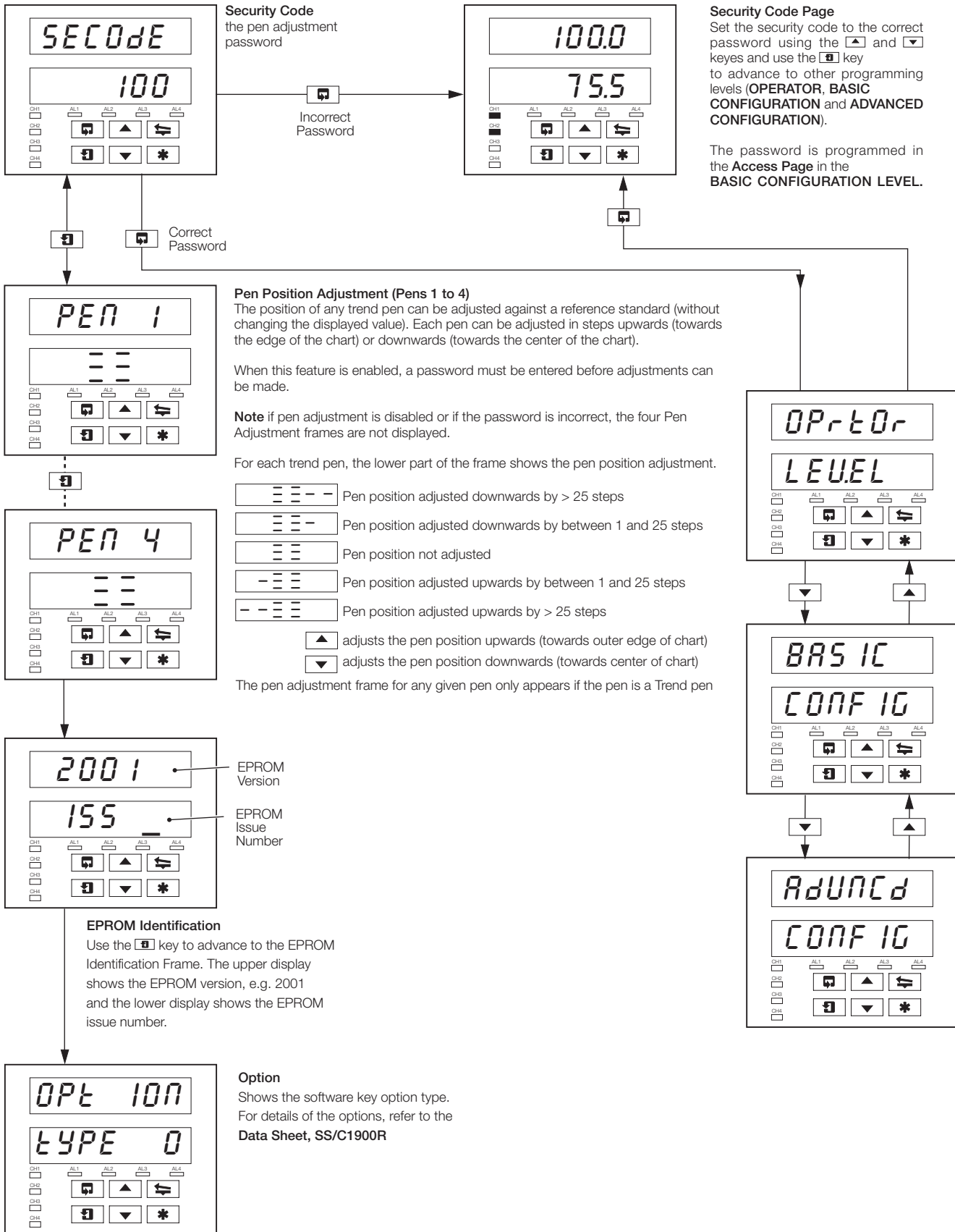
#### Front Panel (Batch) Flow Total 2 (4)

Repeat the above procedure for **Flow Total 2** (4).

**Note.** The number of totalizers is dependent on the number of pens fitted to the instrument e.g. a 3 pen instrument has 3 totalizers.

### 4.5 Access to Configuration Levels

A security system is used to prevent tampering with the programmed parameters by utilizing a password giving access to all programming pages – refer to the **Programming Manual**.



## 5 SIMPLE FAULT FINDING

Symptom	Possible Cause	Action
Does not power up	<ul style="list-style-type: none"> <li>a) Internal fuse (if fitted) is blown</li> <li>b) Internal power switch (if fitted) is OFF</li> <li>c) Power supply connections are incorrect</li> </ul>	<ul style="list-style-type: none"> <li>a) Check wiring, rectify fault and replace fuse</li> <li>b) Turn power switch ON</li> <li>c) Check connections</li> </ul>
Chart does not appear to move	<ul style="list-style-type: none"> <li>a) Very slow chart speed selected</li> <li>b) Chart stop function enabled</li> </ul>	<ul style="list-style-type: none"> <li>a) Select required chart speed in <b>Set Up Chart Page</b></li> <li>b) De-activate source being used to stop chart – see <b>Set Up Chart Page</b></li> </ul>
Pens in recording position but do not drop onto paper	Chart stop function enabled	De-activate source used to stop chart – see <b>Set Up Chart Page</b>
Red pen does not move beyond 94% position on chart	When real time event pen is fitted the red pen cannot go beyond 94% to prevent pens clashing	Use chart range which prevents the need to go beyond 94% of maximum on chart
Pen lift switch on front panel does not work	Pen lift switch is disabled	Enable pen-lift switch in <b>Set Up Chart Page</b>
Pens do not remain lifted when pen lift key is used	Auto pen drop feature is enabled	Disable auto pen drop in <b>Set Up Chart Page</b> if this is not required
Analog inputs are slow to respond	A large filter time has is set	Set digital filter value to give required response in <b>Set Up Inputs</b>
Time or date incorrect	Not set for correct local time	Set correct time and date in <b>Set Up Clock Page</b> – refer to <b>Advanced Software Manual</b>
Totalizers cannot be set to STOP or GO	Operator STOP/GO selection is not enabled in the <b>OPERATOR LEVEL</b>	Enable counter STOP/GO in the <b>Set Up Totals Page</b>
Totalizer cannot be set to STOP	Digital signal assigned to the total STOP/GO function is active	De-activate digital signal assigned to total STOP/GO function
External relays connected to relays in instrument fail to de-energize	Arc suppression capacitors are provided across the relay contacts and capacitor leakage current may be sufficient to prevent an external relay from de-energizing	Remove the arc suppression components – IC4 and IC5 on mainboard IC6 and IC7 on standard I/O and analog relay IC3 to IC10 on 4 relay module

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## 6 SPARES LIST

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Item	Part No.
<b>Pen Capsules (pack of 3)</b>	
Black .....	C1900/0119
Blue .....	C1900/0120
Red .....	C1900/0121
Green .....	C1900/0122
Violet* .....	C1900/0123

### Pen Arm Assemblies

ER/C Type Chart (J or R in Code Number) – Standard Pen .....	C1900/0076
ER/C Type Chart (J or R in Code Number) – Event Pen .....	C1900/0078
PX105 and PXR105 Type Chart (K or S in Code Number) – Standard Pen .....	C1900/0075
PX105 and PXR105 Type Chart (K or S in Code Number) – Event Pen .....	C1900/0077

### Fuses

24V .....	B11071 (4A)
115V .....	B11070 (1A)
230V .....	B11069 (500mA)

\*True time line event option only.



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## NOTES

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