



**TYPE:** JC400-A-XY-RR-MA-ZC-CROSSGATE

**SPECIFICATION:** JC400-0016

**ISSUE:** 3

**DATE:** 09 September 2003

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Penny & Giles policy is one of continuous product improvement, we reserve the right to change this specification and/or the product to which it relates at any time and without notice.

**1 INTRODUCTION**

The JC400-0016 is a high strength, robust, self centring twin axis joystick controller in an analogue format. Fitted with a cross gate to limit the movement to true X and true Y only.

The flange of the main body is circular with four through holes for mounting the joystick. The joystick will be capable of mounting to the customers panel from the bottom.

The operating rod entry point is protected from the ingress of foreign matter by a gaiter. The joystick is sealed to the bottom surface of the customer panel.

All joystick components visible above the mounting panel are coloured black.

**2 ELECTRICAL CHARACTERISTICS**

**2.1 Potentiometric tracks**

Each joystick axis is fitted with conductive plastic potentiometers with an electrical operating angle of  $\pm 16^\circ$ .

A centre tap with an angle of  $\pm 2.5^\circ$  is standard on all tracks so that 48-52% of the applied voltage is supplied at the centre position with no load.

The operating voltage on the potentiometer track should not exceed 30VDC.

Track resistors are placed in series with the main resistive element, these are used to reduce the output. The degree to which the output is reduced is shown in the table below:

Minimum Volt (no load) %	Maximum Volt (no load) %	Resistance k $\Omega$ $\pm 20\%$
8-12%	88-92%	5.0

Insulation resistance @ 50V DC : > 50M $\Omega$ .

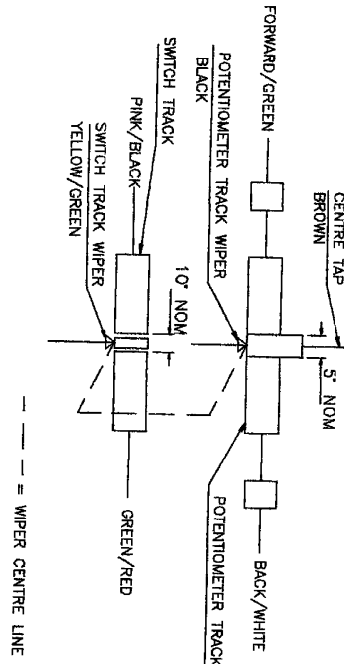
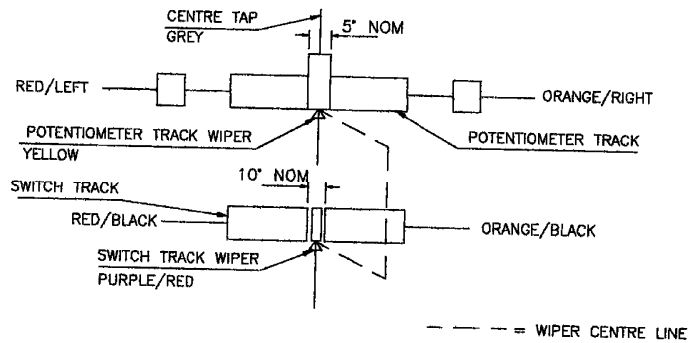
### 2.2 Switch tracks

The direction switches become operational when the joystick is deflected by 5° in any direction.

The maximum wiper current on the switch track is 200mA resistive load over 1 million operations with 5 million operations achievable with a lower current of 10mA.

### Circuit Diagram

#### 10° Switch Track



SK49829C

### 3 ELECTRICAL INTERFACE

This will interface by 8 individual flying leads 7 x 0.2mm PVC cables. The flying leads will exit from the sides of the case under the flange (see installation diagram).

#### Termination Details

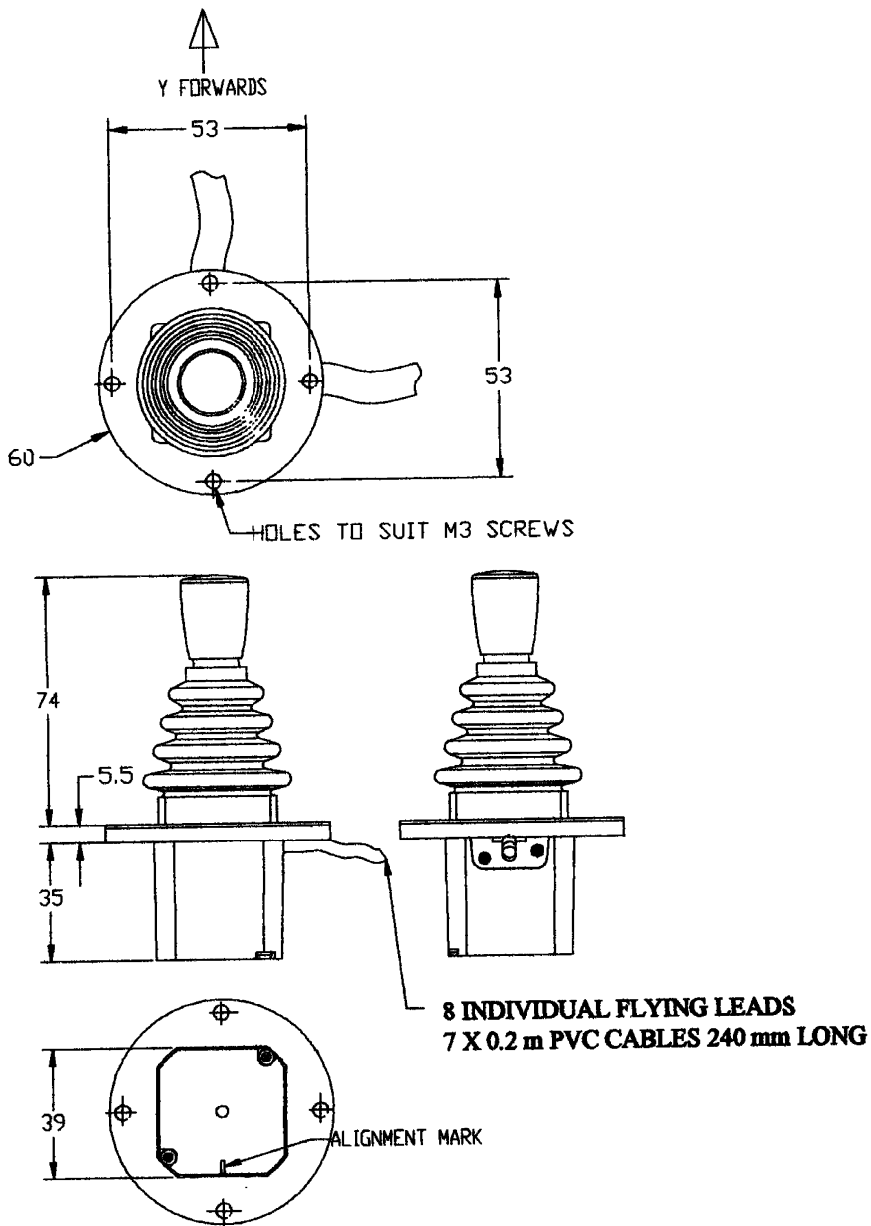
<i>Potentiometric Option – Cable</i>	<i>Wire Colour</i>
Y-axis forward supply voltage	Green
Y-axis centre tap	Brown
Y-axis back supply voltage	White
Y-axis output voltage signal	Black
N/O signal handle forward	Pink/Black
N/O signal handle centre	Red/Brown
N/O signal handle back	Green/Red
Common terminal for Y-axis directional switches	Yellow/Green
X-axis right supply voltage	Orange
X-axis centre tap	Grey
X-axis left supply voltage	Red
X-axis output voltage	Yellow
N/O signal handle right	Orange/Black
N/O signal handle centre	Orange/Red
N/O signal handle left	Red/Black
Common terminal for X-axis directional switches	Purple/Red

### 4 MECHANICAL CHARACTERISTICS

Maximum over load	:	25kgf (at a height of 50mm)
Breakout force	:	2.3N
Maximum operating force	:	6N
Mechanical operating angle	:	±20°
Life (X and Y axes only)	:	5 x 10 <sup>6</sup> cycles **
Seat	:	Non-Preferred axis
Gate	:	Cross
Maximum dimensions	:	see accompanying drawings
Mass (nominal – no handle)	:	0.150kg

\*\* One cycle is defined as full travel from centre to both extremes and back to centre in one axis only.

### 5 MECHANICAL INSTALLATION DETAILS



SK301174

ALL DIMENSIONS IN MILLEMMETERS, TOLERANCE ±0.25

**6     MECHANICAL INTERFACE**

The joystick will require a rectangular hole 37mm x 37mm.

**7     SPECIAL FEATURES**

Cross gate

**8     ENVIRONMENTAL SPECIFICATION**

Environmental rating (above flange)	:	IP65 (BS5490 1977)
Environmental rating (below flange)	:	IP40 (BS5490 1977)
Operating temperature range	:	-25°C to +70°C
Storage temperature range	:	-50°C to +85°C
Frost and Ice	:	The joystick will not operate in an iced condition
Humidity	:	The joystick is capable of operating under conditions of 96% relative humidity (non condensing) at a temperature of +50°C it will not be damaged under conditions of relative humidity as above at a temperature of +85°C.
Salt atmosphere	:	The joystick will function correctly After exposure to salt mist as defined by IEC 6B-2-52 (BS 2011: Part 2.1 kb:1987) severity 2. Direct exposure to salt mist is Limited to that part of the joystick Fitted above the mounting panel.

**9     LABELLING**


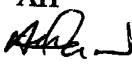
Units will be marked with specification number, the batch number and week number. The product definition numbers will be printed in permanent ink.

**10    RECORDS OF REVISION**

Specification Prepared By:    **Mark Gould**    Date: **13/06/01**

Approved by M Hulett    **Technical Manger**    Date: **13/06/01**

Approved by A C Harris    **Quality Manger**    Date **15/06/01**

<u>Revisions</u>	<u>Change Note No</u>	<u>Prepared</u>	<u>Approved</u>	<u>Quality</u>	<u>Date</u>
2	ECR9136	WL	MJH	AH	02/07/03
3	ECR9470	RMDavies			09/09/03