



TYPE: JC2000

SPECIFICATION: JC2000 Generic

ISSUE: 7

DATE: 27TH January 2004

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1) Product description

This product has a contactless hall effect base assembly designed primarily for precision control applications where safety and a long trouble free life are a pre-requisite in one, two or three axis.

The unit is available with two flange options, a top flange, which is standard and a mid flange which is available to special order and is not a configured item.

The only moving parts of the sensing system are the magnets, therefore flexing wires, which are subject to fatigue action are eliminated.

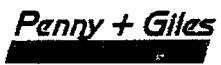
There can be one or two sensors per axis (X and Y axis). When two are required, their outputs can be in the same direction or in opposite directions.

A three axis controller is available with a top flange application only. The third axis is achieved by rotating the handle. The third axis operating parts are located within the base controller, thus removing the flexing wires normally associated with third axis requirements. Note:- Three axis versions are only available with one sensor per axis.

A switched handle can be fitted. Note that the switch is connected by wires and thus will reduce overall life of the unit

Aligned axis seats for X Y axis are available, The aligned axis seat is shaped with shallow tracks in the X and Y axis which provide a guidance to the operating rod action. This is a low force guidance, allowing the operating rod to be moved away from the axis at any time.

Round, square, diamond, single axis, plus and cross gates are available and are retained in the body for transit. During operation the gate should be retained by the trim plate supplied with the top flange unit and by the customers own panel mounting in the case of the mid flange unit.



3) Mechanical Specification

◆ Mechanical Angle
X and Y axis

Round gate fitted +/- 20 degrees maximum
Square gate fitted +/- 20 degrees maximum corners only, +/- 14 degrees to the flats.
Single axis gate fitted +/- 20 degrees fore and aft only.
Cross gate fitted +/- 20 degrees maximum into the extents of the cross.
+/- 20 degrees maximum

Z axis

◆ Operating Forces X and Y

Measured 50mm above the top face
Breakout Force 1 N nom ± 10%
Operating Force 2 N nom ± 10%
Breakout Torque 0.04 Nm ± 10%
Operating Torque 0.06 Nm ± 10%
Max operating torque 1.0Nm (Applied using handle P301776 – K handle)

Z axis

◆ Operating Lever

Shaft diameter to be 6.35mm.
The operating lever will not rotate on two axis versions.
The operating lever rotates to control the Z-Axis function on three axis versions.

◆ Weight Two axis
Including third axis

Typically 90.0 g .
Typically 90.0 g

◆ Life

X/Y Axis
Number of cycles 15 million

Z Axis
Number of cycles 5 million

Joystick with Switch handle
Number of cycles 5 million

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◆ **Maximum Loads**

Static – side - 40kgf minimum (10 load applications max)

Static – top – 80kgf minimum (10 load applications max)

Impact – side – 2kgf dropped 200 mm (one impact)

Impact – top – 2kgf dropped 400 mm (one impact)

All loads applied at the top of the operating rod, fitted with handle P301776 - K handle.

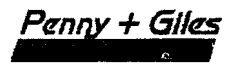
◆ **Maximum permissible Torque**

Two axis

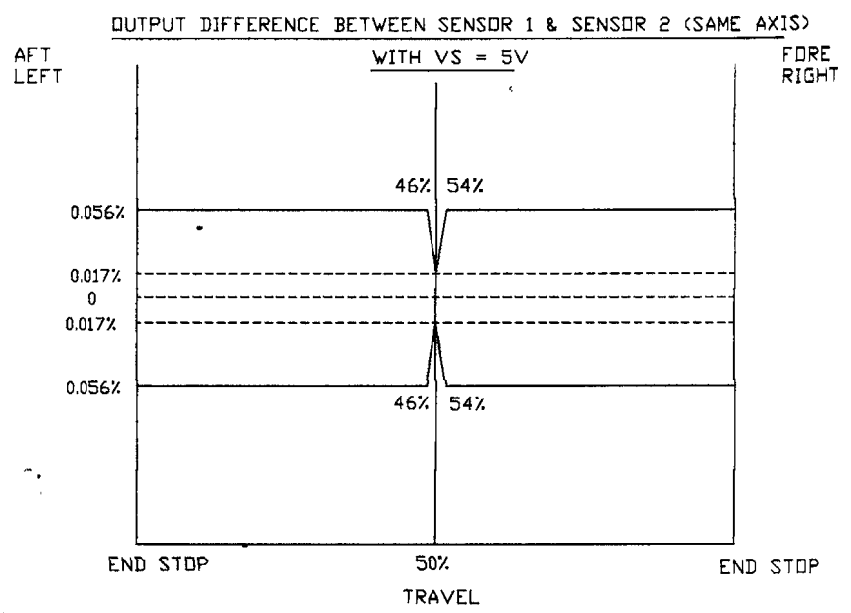
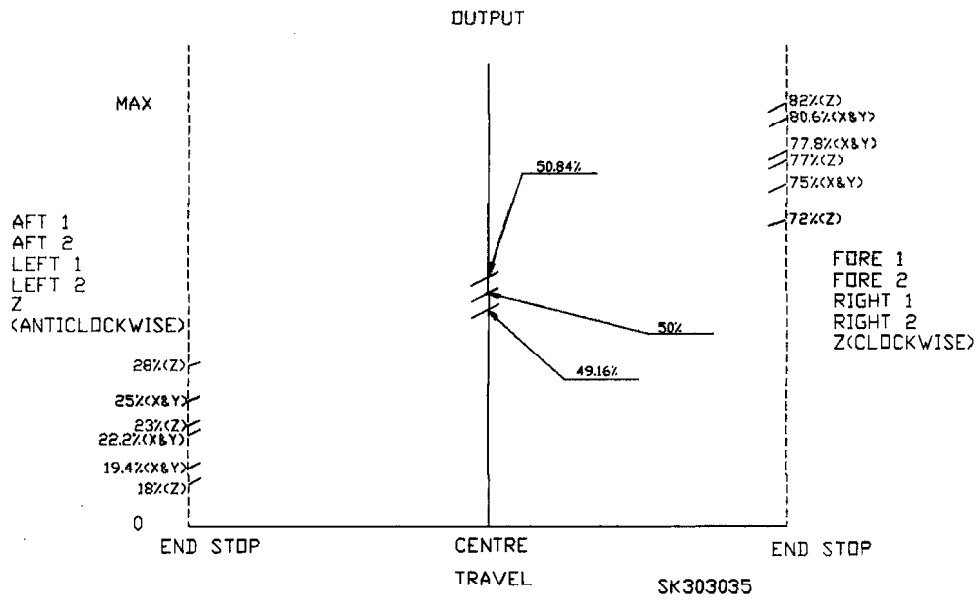
3.7 Nm

Three axis

2.0 Nm

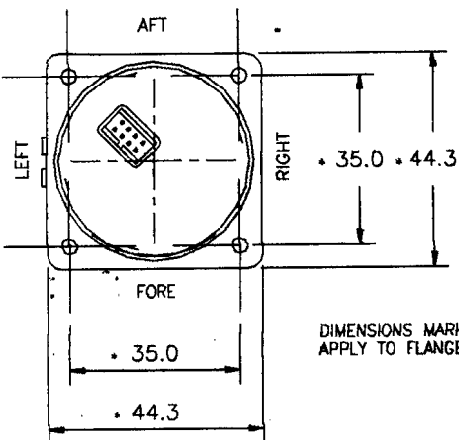
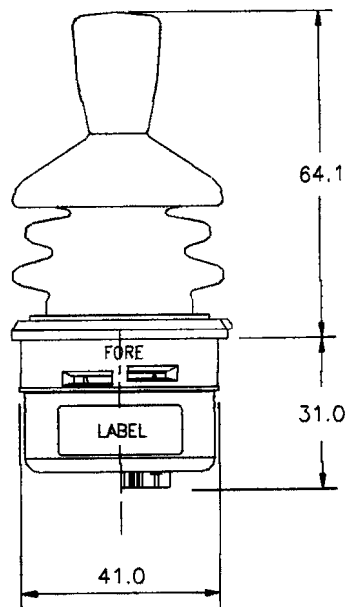
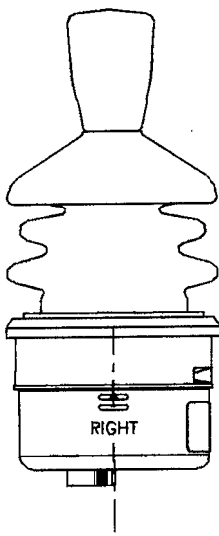
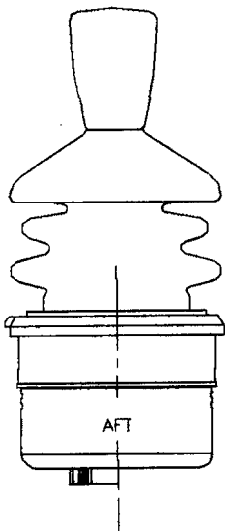
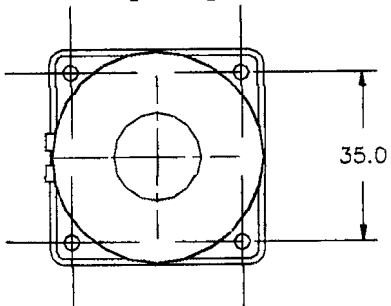


5) Output detail



6) Dimensions

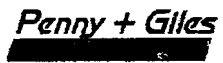
XY Units Top Flange (K1 handle shown)



ALL DIMENSIONS ARE REFERENCE
ALL DIMENSIONS ARE IN MILLIMETERS

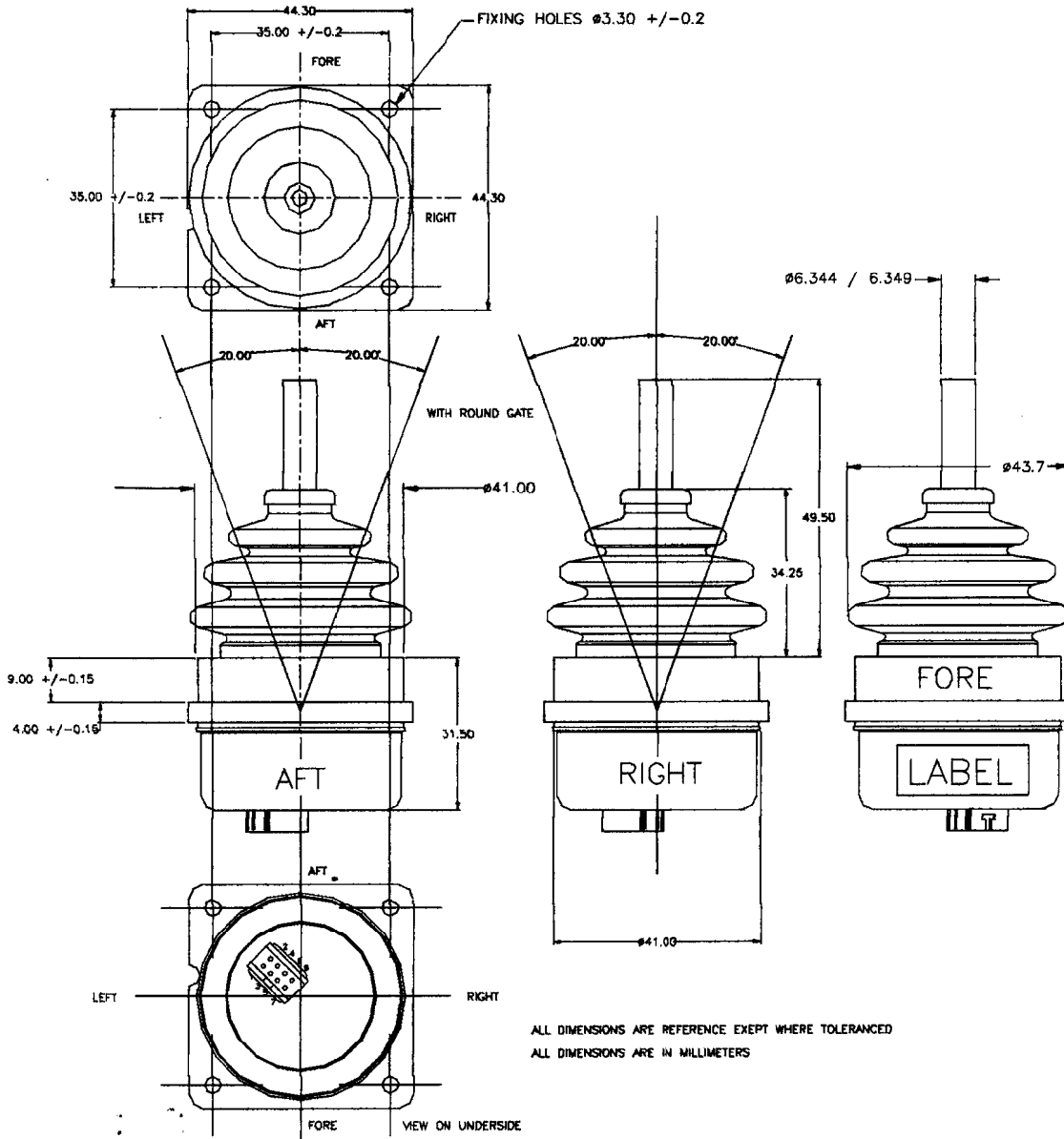
DIMENSIONS MARKED THUS*
APPLY TO FLANGE ONLY

SK302318issue2
CAD SERVER/ISSUED/MULTI



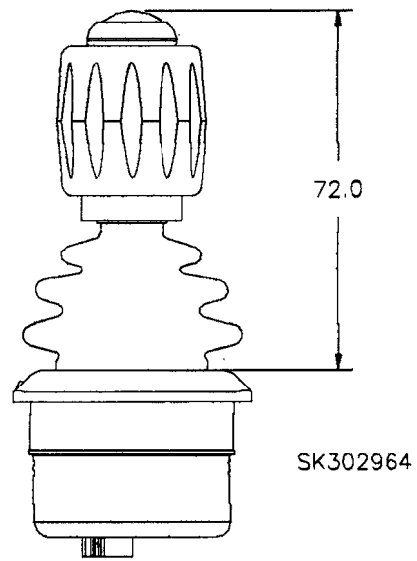
XY Units Mid Flange(no handle shown)

NOTE: Mid-Flange is available as Special order.

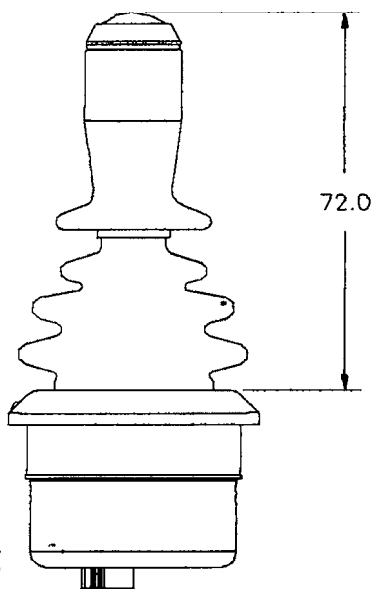




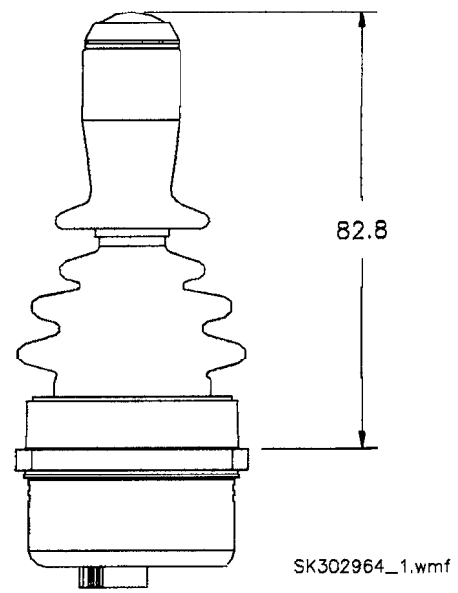
Third axis handle (E handle including switch shown)



Switch handle (S handle including switch shown)

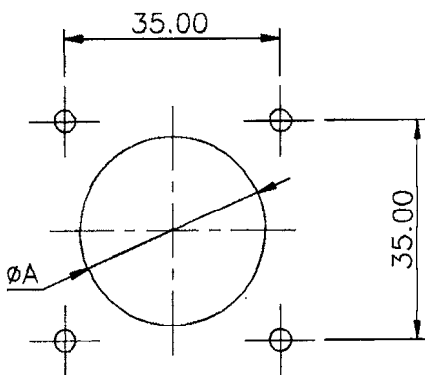


TOP-FLANGE



MID-FLANGE

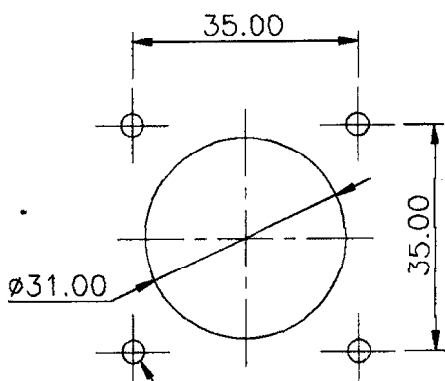
Mounting details – Top Flange



<u>APPLICATION</u>	<u>φA</u>
TOP MOUNT	42.00
BOTTOM MOUNT	31.00

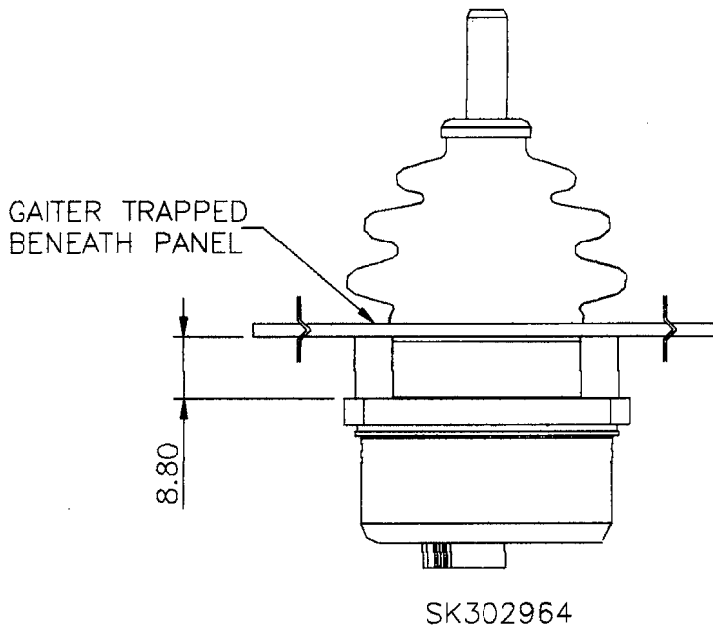
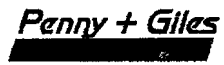
SK302964

Mounting details – Mid Flange

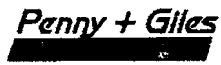


4 OFF BOSSES TO SUIT
FIXING SCREW – REFER TO
PAGE 14 FOR HEIGHT DETAIL.

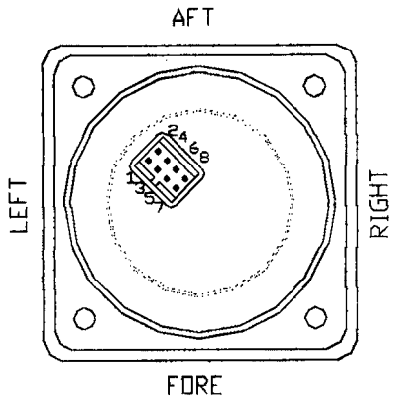
SK302964



It is advised never to mount the JC2000 directly to a PCB via its header but to use a flying lead.



7) Connection Detail (top flange shown)



VIEW ON BOTTOM OF JOYSTICK

HEADER ON JOYSTICK CONTROLLER PCB
 - FCI-BERG MINITEK 98414-F06-08U
 IDC CONNECTOR
 - BERG 89361-708 9TO BE SUPPLIED BY CUSTOMER

STANDARD XY UNITS

- 1) POWER SUPPLY
- 2) LEFT/RIGHT OUTPUT 1
- 3) 0V
- 4) FORE/AFT OUTPUT1
- 5) FORE/AFT OUTPUT2
- 6) POWER SUPPLY / 2 - (2.5V Output Ref.)
- 7) LEFT/RIGHT OUTPUT 2
- 8) NOT CONNECTED

XY UNITS WITH SWITCH HANDLE

- 1) POWER SUPPLY
- 2) LEFT/RIGHT OUTPUT 1
- 3) 0V
- 4) FORE/AFT OUTPUT 1
- 5) FORE/AFT OUTPUT 2
- 6) POWER SUPPLY / 2 - (2.5V Output Ref.)
- 7) LEFT/RIGHT OUTPUT2
- 8) SWITCH OUTPUT

SWITCH IS CONNECTED BETWEEN PINS 1 AND 8

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XYZ UNITS

- 1) POWER SUPPLY
- 2) LEFT/RIGHT OUTPUT
- 3) 0V
- 4) FORE/AFT OUTPUT
- 5) NOT CONNECTED
- 6) POWER SUPPLY / 2 – (2.5V Output Ref.).
- 7) Z-AXIS OUTPUT
- 8) NOT CONNECTED

XYZ UNITS WITH HANDLE SWITCH

- 1) POWER SUPPLY
- 2) LEFT/RIGHT OUTPUT
- 3) 0V
- 4) FORE/AFT OUTPUT
- 5) NOT CONNECTED
- 6) POWER SUPPLY / 2 – (2.5V Output Ref.).
- 7) Z-AXIS OUTPUT
- 8) SWITCH OUTPUT

SWITCH IS CONNECTED BETWEEN PINS 1 AND 8



8) Order code

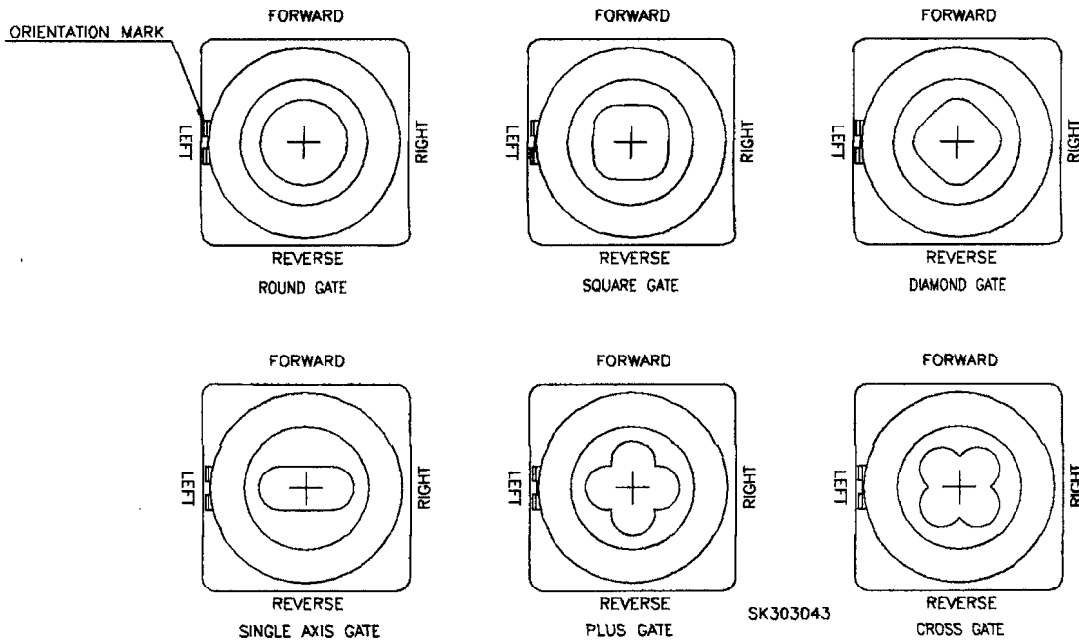
ORDER CODE - X & XY UNITS													
CODE	MOUNTING	CODE	AXES	CODE	OUTPUT/SENSE	CODE	VOLTAGE OUTPUT	CODE	HANDLE	CODE	GATE	CODE	SEAT
T	TOP (JC200)												
M	MIDDLE *	X	X (SINGLE)										
		XY	XY										
				P	POSITIVE								
				N	NEGATIVE								
				O	NOT USED								
				25	25% SPAN								
				30	30% SPAN**								
				40	40% SPAN**								
						K1			STANDARD				
									SHAPED				
						E			SWITCHD - BLACK				
						E1			SWITCHED - RED				
						E2			SWITCHED - GREEN				
						E3			SWITCHED - YELLOW				
						E4			SWITCHED - BLUE				
						E5							
						S			STRAIGHT				
						S1			SWITCHD - BLACK				
						S2			SWITCHED - RED				
						S3			SWITCHED - GREEN				
						S4			SWITCHED - YELLOW				
						S5			SWITCHED - BLUE				
										R	ROUND		
										S	SQUARE		
										I	SINGLE		
										C	CROSS		
										P	PLUS		
										D	DIAMOND		
												N	NON-ALIGNED

* PLEASE REFER TO PENNY & GILES PRIOR TO ORDERING

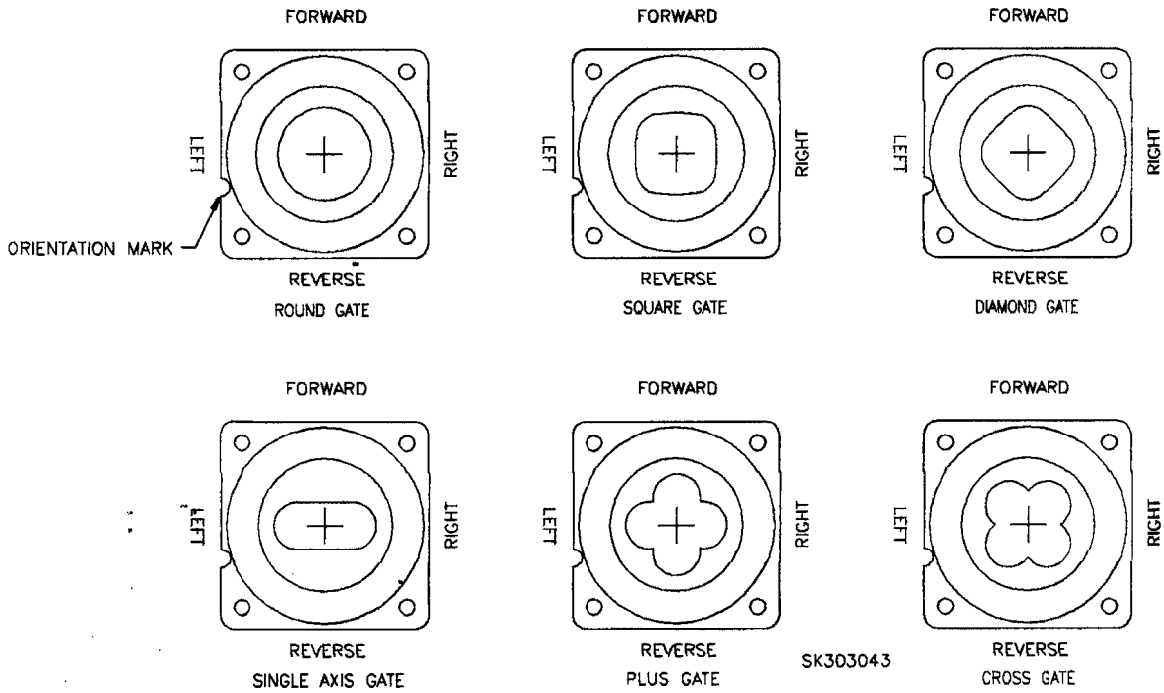
** THESE OUTPUT VOLTAGES ARE CURRENTLY ONLY AVAILABLE ON X & XY PRODUCTS

9) Gate options

Top Flange



Mid Flange



11) Labeling instructions

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

12) Packing instructions

When fitted with a K handle the joystick has its gaitor, gaitor protector, gasket and handle packed separately in a polyethene bag. The joystick controllers can be packed individually in a corrugated cardboard carton or in a corrugated cardboard carton with a maximum of 50 units per carton.

13) Record of revisions

Specification Prepared By: P. Evans



Date: 16/10/01

Approved by: M. Hulett

Technical Manger Date: 16/10/01

Approved by: A. Harris

Quality Manger Date: 16/10/01

<u>Revisions</u>	<u>Change Note No.</u>	<u>Prepared</u>	<u>Approved</u>	<u>Quality</u>	<u>Date</u>
2	ECR 8280	P. Evans	M. Hulett	D. Alexander	22/10/02
3	ECR 9148	P. Evans	M. Hulett	A. Harris	15/04/03
4	ECR 9180	R. Dent	M. Hulett	A. Harris	04/06/03
5	ECR 9286	P. Evans	M. Hulett	A. Harris	08/07/03
6	ECR 9547	R. Dent	M. Hulett	A. Harris	21/10/03
7	ECR 9809	C. Docherty			27/01/04