

Appendix A - Mount Specific Data
For
Vertex/RSI 2.4 m. MVO
(RC3050E)

This appendix describes the unique functions of the RC3050 for the Vertex/RSI 2.4 meter MVO mount.

Revision History: 10 May 2002 reflecting software version 1.15.

1.1 Manual Organization

This appendix is provided as a supplement to the baseline RC3050 manual. The corresponding paragraphs in the baseline RC3050 manual are referred to when data specific to the Vertex/RSI 2.4m. MVO mount is described.

1.2 RC3050 Features

All RC3050 features described in the baseline manual are present with this version. The unique features of this version of the RC3050 are:

- 1) The backpanel connectors are different from the baseline RC3050 connectors. These connectors allow use of standard RSI MVO interface cables.
- 2) Additional inputs from the MVO cable are interpreted to determine which type of feed is currently attached to the mount. Separate polarization reference voltages are maintained for three linear (C/Ku/Ka) feed types.
- 3) The RC3050 drives brakes for the azimuth and elevation axis.

Hardware Configuration. This version of the RC3050 will be referred to as an "E" model. Internally this version is similar to an "A" version (low voltage DC motor control), but the backpanel of the chassis has been modified to connect directly to RSI MVO wiring.

Software Configuration. The model number for this version is R4.

1.3.1 Controller Description.

A high level system interconnect drawing of the RC3050E is provided in section 4.3 (schematics).

1.3.2 System Interface Requirements.

The following unique interface requirements are present for the RC3050E:

- 1) Four discrete inputs are present to signal whether the MVO mount currently has linear or circular polarization present and whether a C, Ku, Ka or X-band feed is attached.
- 2) The RC3050E provides relays to energize the azimuth and elevation brakes.

2.1.1 RC3050 Antenna Controller.

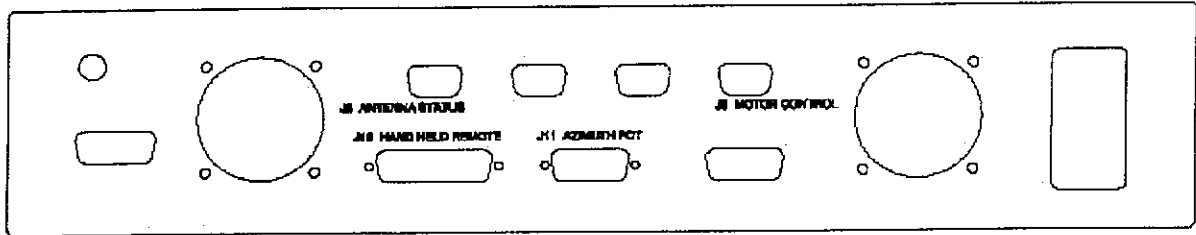
The RC3050E is slightly deeper (19.1" vs. 17.05") than the standard RC3050. This additional depth is required to accommodate the backpanel with the MVO connectors.

2.1.2 Electronic Clinometer

The inclinometer should be rigged with the backstructure vertical. With the backstructure vertical, the inclinometer should be mounted so that it is 12.7 (35.0 –22.3) degrees from vertical.

2.2 Electrical Connections

The RC3050E's backpanel contains the standard connectors for use with the RSI MVO's antenna status (J8) and motor control (J9) cabling. The following diagram shows these connectors.



2.2.1 Power Entry

The RC3050E has the same fuse requirements as the RC3050A model (8 A. for 115, 4 A. for 230).

2.2.2 Motor Drive

2.2.3 Drive Sense

2.2.4 Limit Switches

2.2.7 Accessories

2.2.10 Pulse Sensors

Internal to the RC3050E is cabling that adapts the standard interface connections shown in the baseline manual to the MVO style connectors on the backpanel. Note that brakes are implemented via the accessories connector and that feed type is sensed via the pulse sensor input. A schematic is provided in section 4.3 showing this adaptation.

The individual MVO connectors are now discussed.

J9 - Motor Control

Azimuth, elevation and polarization drive along with azimuth and elevation brake control is provided via J9. J9 is a female 35 pin Amphemnol MS (size 28-15) type connector.

J8 - Antenna Status.

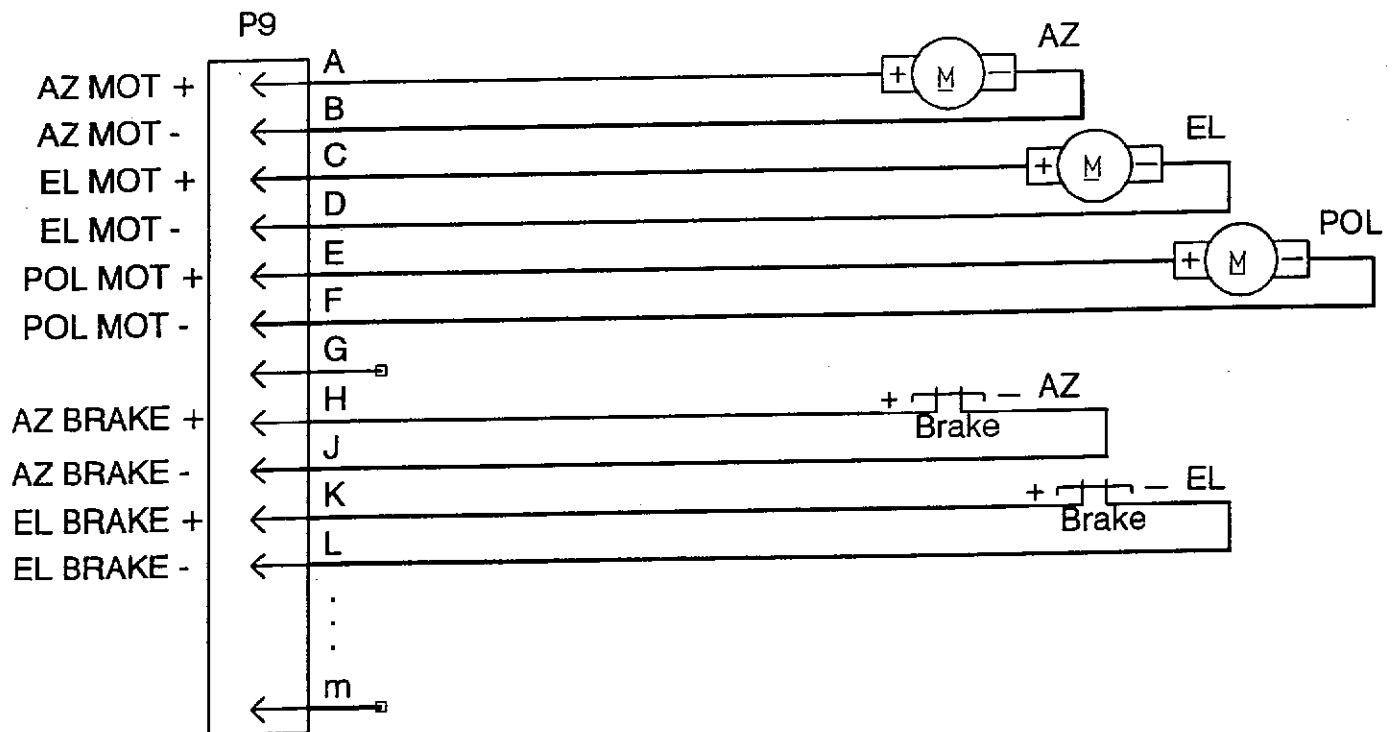
Limit switch status, feed type status, polarization and elevation position is provided via the J8 connector. J8 is a female 37 pin Amphemnol MS (size 28-21) type connector.

J11 - Azimuth Potentiometer

The azimuth potentiometer is interfaced via J11. J11 is a female DB-15 type connector.

Pinouts for the J8, J9 and J11 connectors are shown in the following diagrams.

MOTOR CONTROL

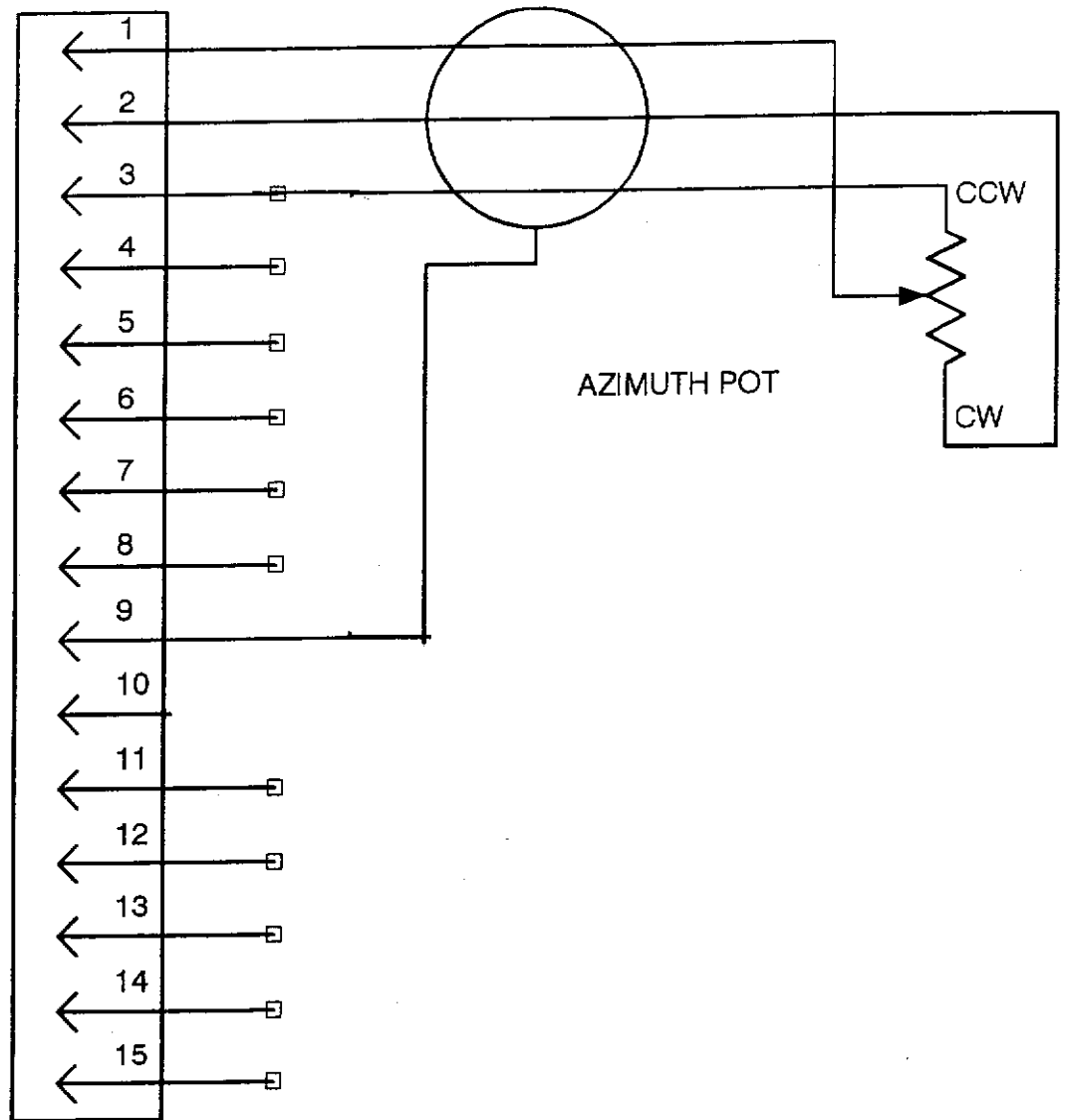


AZ POT CONNECTOR

P11

AZ pot wiper
AZ pot CW
AZ pot CCW

AZ Shield



2.3.3 Position Sensor rigging and Calibration

Polarization Center.

At power up the RC3050E senses which type of feed system (Circular/Linear (C, Ku, Ka or X-band)) is installed. A separate reference voltage is stored for each linear type. Therefore the polarization reference voltage step should be performed for each type of linear (C/Ku/Ka) feed (see 3.3.4).

A default reference value of 2.5 will be set for each feed type until explicitly set. **Again note that feed type is only sensed at power up.**

3.2.1 Manual Mode.

If circular polarization input is sensed at power up, no polarization angle or limit will be displayed in the MANUAL mode.

If an invalid combination (see 3.3.6) of feed type inputs is sensed at power up, ??? will appear in the fields where normally the polarization angle and limit status is displayed.

3.2.2.2 Stow

If linear polarization is present, the polarization axis will be driven to the CCW limit prior to going down in elevation.

NOTE: If linear polarization is present, down elevation movement below the DOWN limit is prohibited unless the polarization STOW (CCW) limit is active.

3.3.4 Polarization Reference Voltage

Separate reference voltages are maintained for the three different linear feed types (C/Ku/Ka). This screen is slightly different from that described in the baseline manual. The type of linear feed sensed is displayed in the upper left corner.

```
Ka P VOLT: 2.500
<UP>SET (2.482)
```

If a circular polarized feed is present, this screen will not be displayed. If an invalid combination (see 3.3.6) of feed type inputs is sensed at power up, ??? will appear in the upper left hand corner.

3.3.6 Polarization Limits

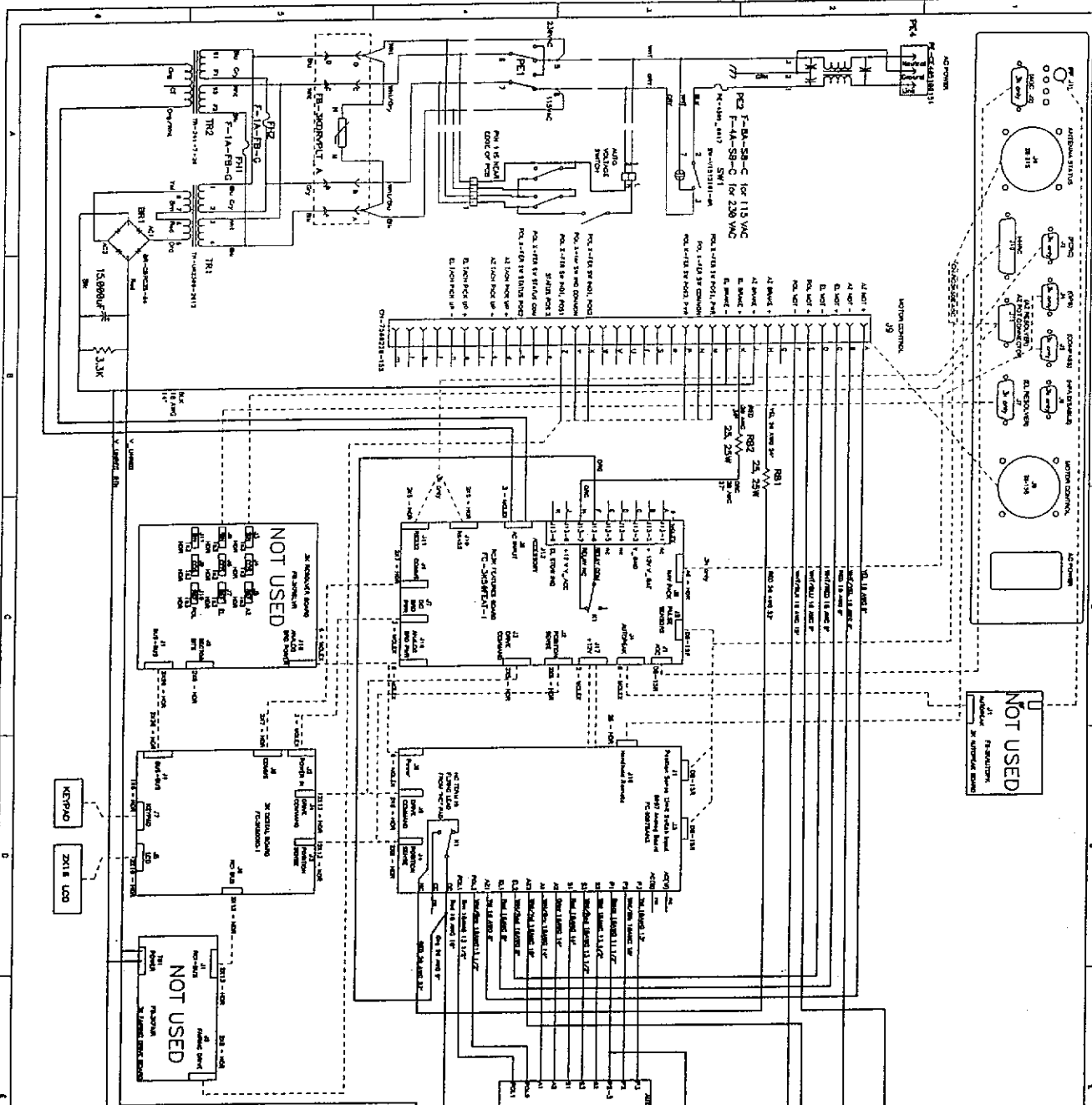
A second line has been added to this screen to show feed-type inputs.

PL CW:0 CC:1 S:0
f:1 j:0 E:1 R:0

The letters f, j, E and R correspond to corresponding pin in the connector. A 1 indicates that a switch closure is sensed at the pin. Note that E actually represents a logical OR'ing of pins E and D. The following table shows how the feed input combinations are interpreted.

Pin f	Pin j	Pin E	Pin R	Sensed Feed Type
0	0	0	1	C-Band Linear
0	0	1	0	C-Band Circular
0	1	0	0	X-Band Circular
0	1	0	1	Ku-Band Linear
1	1	0	0	Ka-Band Circular
1	1	0	1	Ka-Band Linear
All other combinations				INVALID FEED TYPE

4.3 Schematics



Research Concepts, Inc.

SYSTEM INTERCONNECT

DATE	NUMBER	REV.
C	RCCK500E SYSTEM	B

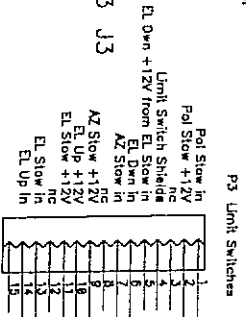
DATE: MAY 7, 2002
 DRAWN BY: LAR
 CHECKED BY: LAR
 NUMBER OF SHEETS: 1 OF 1

attach to PCB mounted DB-15F with
2pcs. each CN-206514-1 and CN-206942-1
post and clip kits.

W-22AWG (10)

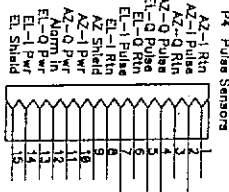
CN-97-3102 A28
CN-9728-215

J8
ANTENNA STATUS
when used without
the resolver option.



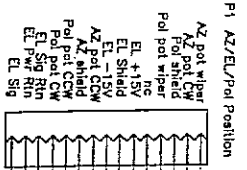
CN-747908-2

attach to PCB mounted DB-15M with
2pcs. each CN-206514-1 and CN-206942-1
post and clip kits.

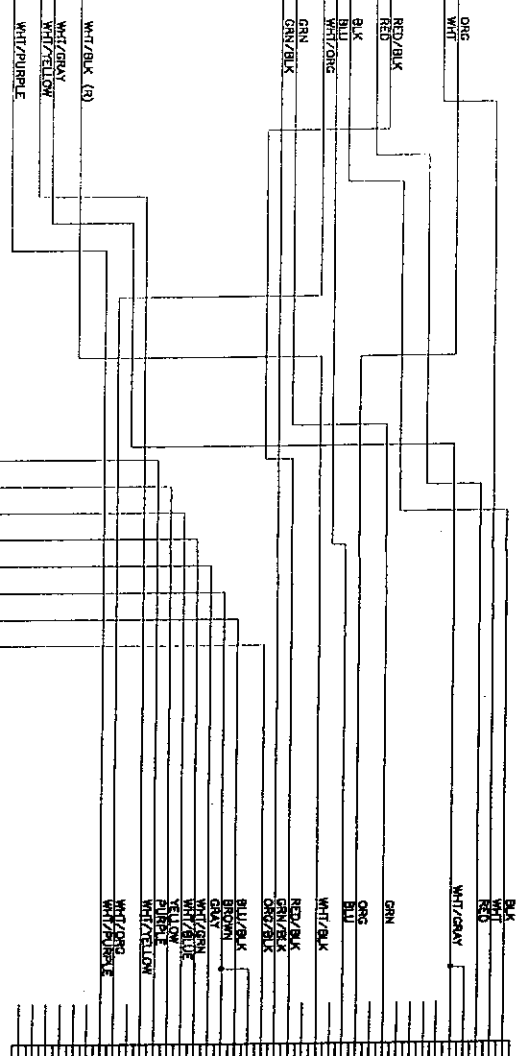


CN-747909-2

attach to PCB mounted DB-15F with
2pcs. each CN-206514-1 and CN-206942-1
post and clip kits.



CN-747908-2



- A AZ Link Common
- B Pol Link NO
- C AZ Center Link NO
- D Line Ground feed type NO
- E AZ Center Link NO
- F AZ Center Link NO
- G AZ Center Link NO
- H AZ Center Link NO
- I AZ Center Link NO
- J AZ Center Link NO
- K AZ Center Link NO
- L AZ Center Link NO
- M AZ Center Link NO
- N AZ Center Link NO
- O AZ Center Link NO
- P AZ Center Link NO
- Q AZ Center Link NO
- R AZ Center Link NO
- S AZ Center Link NO
- T AZ Center Link NO
- U AZ Center Link NO
- V AZ Center Link NO
- W AZ Center Link NO
- X AZ Center Link NO
- Y AZ Center Link NO
- Z AZ Center Link NO
- AA AZ Center Link NO
- AB AZ Center Link NO
- AC AZ Center Link NO
- AD AZ Center Link NO
- AE AZ Center Link NO
- AF AZ Center Link NO
- AG AZ Center Link NO
- AH AZ Center Link NO
- AI AZ Center Link NO
- AJ AZ Center Link NO
- AK AZ Center Link NO
- AL AZ Center Link NO
- AM AZ Center Link NO
- AN AZ Center Link NO
- AO AZ Center Link NO
- AP AZ Center Link NO
- AQ AZ Center Link NO
- AR AZ Center Link NO
- AS AZ Center Link NO
- AT AZ Center Link NO
- AU AZ Center Link NO
- AV AZ Center Link NO
- AW AZ Center Link NO
- AX AZ Center Link NO
- AY AZ Center Link NO
- AZ AZ Center Link NO

NOTES:
Pol Stop is located at POL CCW and is valid
only when using a Ku-band linear feed.

Revision history:
A - original
B - changed the AZ pot wiring so that W-22AWG can use the same cable for the AZ resolver and the AZ pot. This change will commence after s/n 413. They will change the AZ pot and motor wiring but not feed type in s/n 313 to the B revision. Changed the motor polarity for AZ and EL to the what they have. Added shield connection to J7 and J18, swapped the original and blue wires on J18 and J19 and J20 to match the RS3 wire colors. reworked blue/red (J55) to O+E pins for new feed arrangement. Relabeled J8 pins Q, R, S, T, U, V, W, X, Y, Z to conform to new sig.

Title		RCS080E Back Panel Interconnects	
Size	Number	Rev	
B		B	
Date		8 May 2002	
Drawn by		JFR	
Filename		CK-RCS0E_BP_Invrnsd_Sheet 1 of 8	

A

B

C

D

4

3

2

1

4

3

2

1