INSTALLATION AND OPERATIONS MANUAL

JD-CLC-T3-2000
Software Version 4.2 Dated: 9/9/2008
Black Box Replacement

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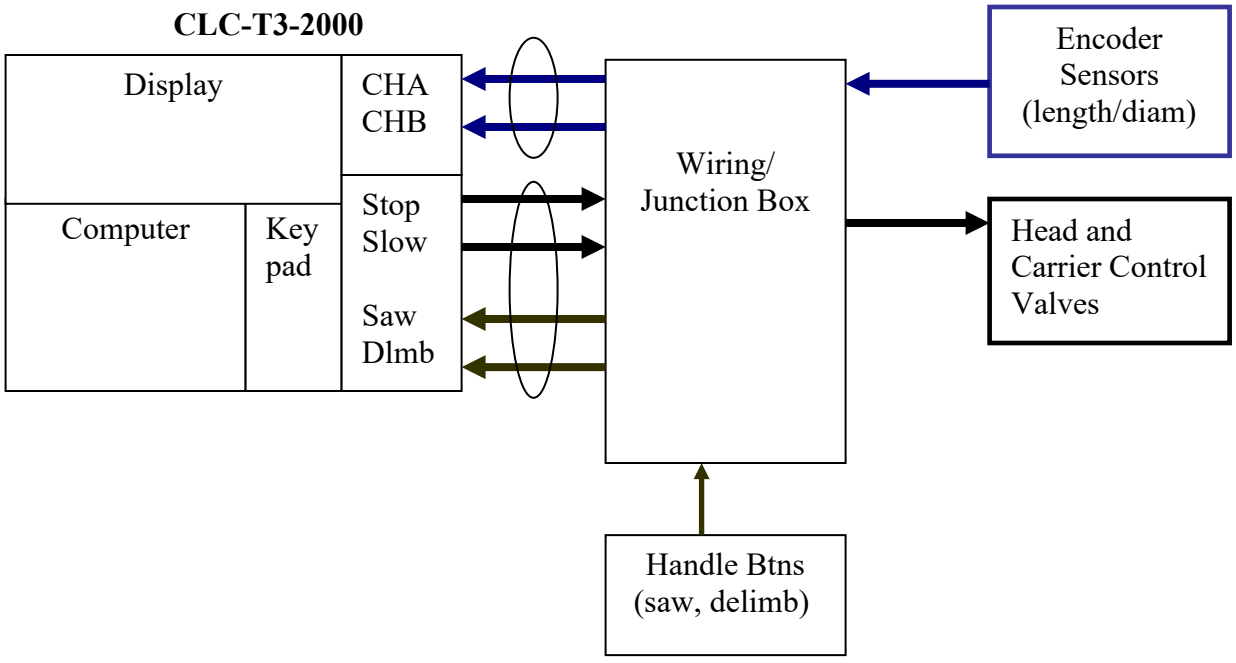
ENCODER VERSION

JORAL
CLC-T3- 2000 MANUAL
ENCODER VERSION

The Joral CLC-T3-2000 is a replacement computer for the “3 piece” or “Fabtek Series 2000” cut length controller. The CLC-T3-2000 (T3 for short) replaces the old computer, the display and the keypad with a single box that provides all those functions. The relay/junction box for the old systems stays in place. The connectors on the T3 are wired to directly accept the cables from the old system relay/junction box. If extender cables are necessary for installation they are can be provided. The T3 has 9 presets, each with its own settings. The T3 provides control for 2-speed valve controls, with a slow and stop control output.

This manual provides detailed information for the Joral CLC-T3 System consisting of the integrated CLC-T3 with computer, display and keypad. The T3 is part of the overall head and carrier control.

TYPICAL SYSTEM OVERVIEW



GENERAL CLC OPERATION

The CLC has the display and keypad for the user to observe and control operation and change the settings. The CLC-T3-2000 has 9 presets, each with a setting for the stop length and a setting for the slow region. The keypad is used to choose which preset to use.
The T3 receives length information from the Encoder on the Measuring Wheel. It computes the length of the current log and activates the Slow output to the Rolls when the measurement gets close to the desired length. It activates the Stop output to the Rolls when the measurement reaches the desired length.
The Saw button from the handles is brought into the CLC to reset the current length measurement to 0.
The Delimb (run-through) button from the handles is brought into the CLC or clear the Slow and Stop outputs and to keep them from being activated while feeding. The Delimb input does not affect the current length measurement.

Important Note: The T3 does not activate the Stop Output when the Saw Button is pressed. If it is desired to keep the feed rolls from operating when the saw is out, an external control relay or other device must do it.

CLC-T3 SPECIFICATIONS

Electrical Requirements
12v or 24v power system
500millamps current draw
Uses reliable Amp circular plastic connectors (CPC)
3 Amp Valve Control Outputs

Input Functions
Length 1 Measurement Encoder / Prox
Aux Length Measurement Encoder
Aux 2 Length Measurement Encoder
Diameter Encoder
Saw
Delimb (Run-Through)

Output Functions
2 Speed Drive Valve Control
- Stop Valve Output
- Slow Valve Output

Length Measurement
One of the following: *(this system uses encoders)*
- ⇒ 1, 2 or 3 measure encoder (typically 1st center measure wheel , 2nd and 3rd drive wheels)
- ⇒ 1 Prox input plus a fwd/rev direction input : setting from 1 to 50 counts per inch
- ⇒ 2 Prox : setting from 1 to 50 counts per inch

Encoders are sinking.
Proxs can be sinking or sourcing.

Diameter
Diameter sensor is an Encoder device.
The encoder is sinking. Encoder requires Ch A, Ch B and Marker (index/zero) outputs.

Presets
9 presets are available, each with it's own independent settings. Presets are stored in permanent memory. The intent of the 2 speed control is go fast towards the desired cut length until you get close, then go slow until you reach the length, then stop.
Each preset has:
- ⇒ Stop : Desired cut length in inches (for example 100 inches)
- ⇒ Slow : Number of inches within the desired cut length for feed rollers to go into reduced speed (for example 10 inches, which would slow the speed down within 10 inches of the desired length, but be fast when further than 10 inches from the desired length).
- ⇒ Diameter Stop : Minimum diameter to use as a stop setting that overrides the length (stop) preset.
- ⇒ Measure Input : Allows selection of the particular length input sensor to use (such as measure wheel, feed roll, two feed rolls)
- ⇒ Beeper : The computer can sound the beeper in a pattern (or no beep) based on the type of log being cut (Sawlog, Pulp or Undersize) if the diameter encoder is available.
- ⇒ Under/Pulp/Sawlog : Allows setting of diameter for the type of log (if the diameter is available).

T3 Cut-Length Control
The computer counts length as input from the length encoder. The operator can set 9 different length presets and select one using the keypad or joystick. The count is reset with the saw and increases as the rolls move forward. The log feeds forward until it reaches the slow region where the T3 issues the Slow Output. The log continues to feed forward until it reaches the preset stop setting where it issues the Stop Ouput. The operator saws the log, which resets the count and allows the next measurement to start.

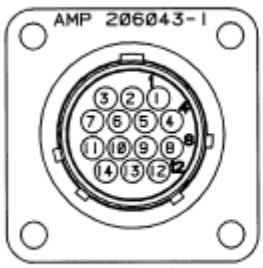
If the Saw Button resets the current measurement length to 0.
If the Delimb Button (run-through) Input to the T3 is active, the measurement counting function normally, but the Slow and Stop Outputs will not activate so a delimbing operation can performed without stopping or slowing down.

T3 General Input/Output Capability
From the view of a general control computer, the CLC-T3 has the following I/O. Any special requires to use these signals would be programmed into the CLC special by Joral. Contact Joral about your requirements.

- ⇒ 10 digital inputs
- ⇒ 10 button inputs
- ⇒ 10 encoder inputs (requires 3 per encoder)
- ⇒ 8 digital outputs
- ⇒ 3 PWM outputs
- ⇒ Run input
- ⇒ Safety Interlock input

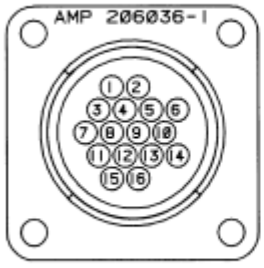
T3 Connectors
Signals are brought in on two connectors located on the T3.

ENCODER CONNECTOR



ENCODER CONNECTOR	
PIN	SIGNAL OR FUNCTION
1	WHEEL B
2	WHEEL A
3	
4	
5	LEFT B
6	LEFT A
7	RIGHT B
8	RIGHT A
9	DIAMETER A
10	DIAMETER B
11	DIAMETER MARKER
12	GROUND
13	ENCODER POWER (+5VDC)
14	GROUND

HEAD CONNECTOR



HEAD CONNECTOR	
PIN	SIGNAL OR FUNCTION
1	PROX. 1
2	PROX. 2
3	MEASURE DIRECTION
4	RESET
5	DELIMB
6	STOP
7	SLOW
8	
9	
10	
11	
12	
13	
14	
15	POWER
16	GROUND

CLC-T3-2000 OPERATION GUIDE

This section describes the operation of the CLC-T3 screens.
For detailed information on the Setup Screens please the Quick Setup Guide Section.

Key Components of the CLC-T3 Front Panel.

The LCD Display has 4 rows of 20 characters for displaying screens.
The Keypad has numbers 0 to 9 plus the # (pound key) and * (star key) for entering information.
The Dial rotates to change values and also can be pressed like a button to call up the Setup Screens.

Basic Operation from the Main Status Screen

KEYPAD

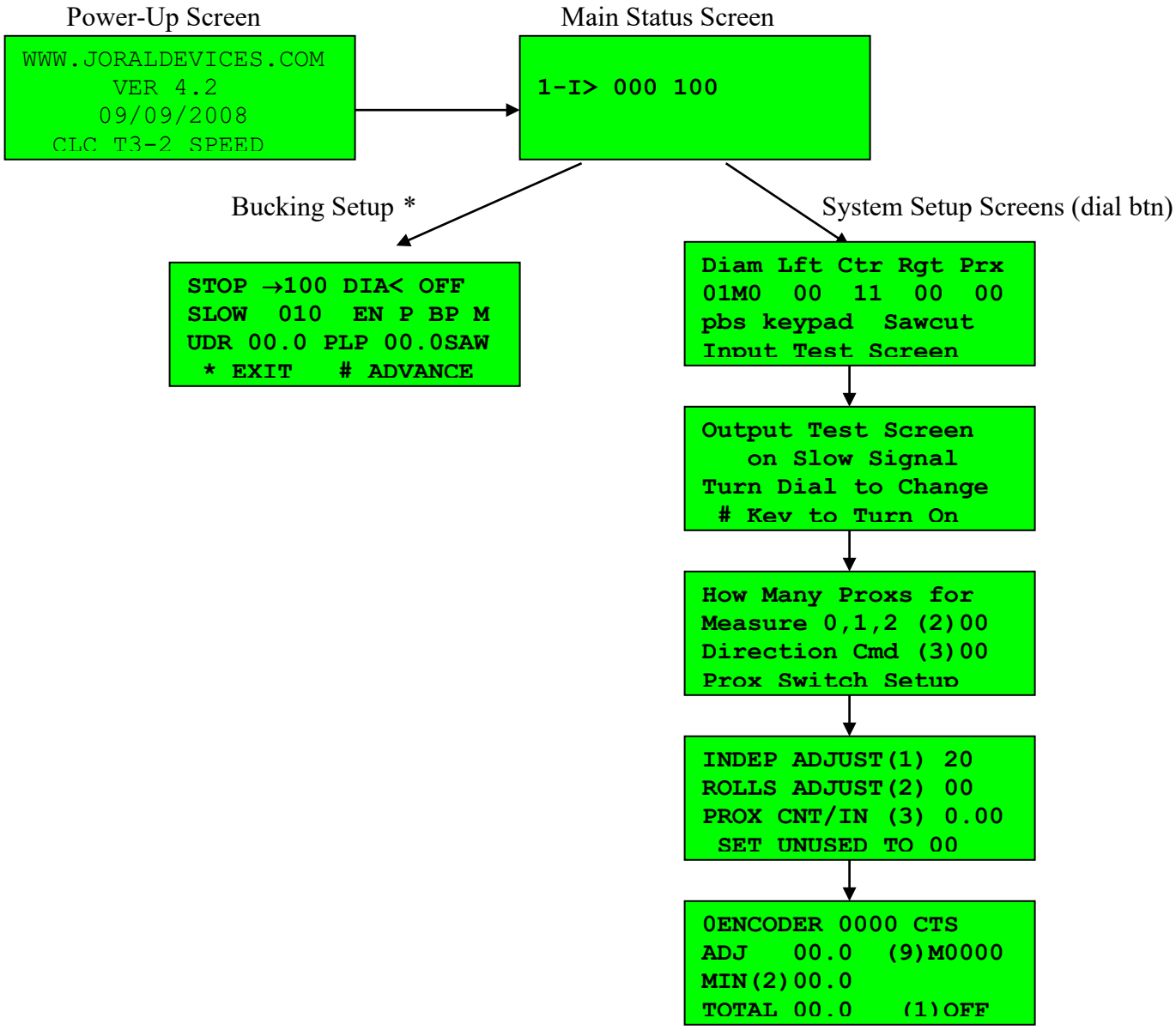
1 to 9 : from the Main Status Screen the keypad numbers 1 to 9 are used to select the Preset.
* : from the Main Status Screen the * key will bring up the Bucking / Preset Setup Screen where the settings for the current preset can be viewed or changed.
# : from the Main Status Screen the # key will bring up the System Setup Screens.

DIAL

Rotate : from the Main Status Screen rotating the dial will change the Stop setting for the current preset.
Push Dial Button : from the Main Status Screen pushing the dial button will call up the first system setup screen. Continuing to press the dial button will shuffle the display through each of the 5 setup screens.

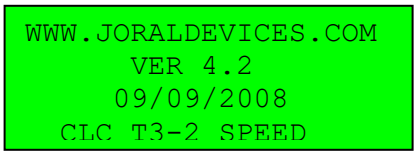
DISPLAY SCREENS

The CLC-T3 has the following screens. The Power-up Screen is shown for a few second when power is applied then the Main Status Screen is automatically displayed. From the Main Status Screen the * key can be used to display the Bucking/Preset Setup Screen or the Dial Button can be pressed to display the system setup screens.



POWER-UP SCREEN

The Power-up Screen is displayed for several seconds when power is applied to the CLC-T3. The system will automatically proceed to the Main Status Screen. Please note the version being displayed (shown here as 3.0) as it will be important if you need technical support.



Clear All Memory

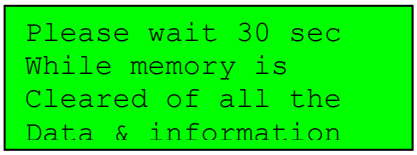
There may be an occasion where you want to **Clear All Memory** in the CLC. This will set all the Measurement Setup and the 9 Bucking Preset settings back to factory default values. After clearing the memory you must re-enter the settings for the CLC to operate correctly.

HOW TO CLEAR ALL MEMORY

>Push and Hold # key during the Power-up Screen

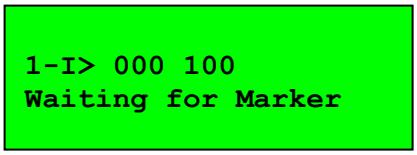
Press the # key and keep it pressed during the entire time the Power-up Screen is being displayed. The CLC will see the # key and begin clearing the memory.

While the memory is being cleared the screen will display a message to wait until the clear is completed. You can release the # key at this time. When it is done, the CLC will automatically power-up again.



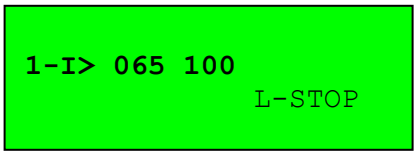
WAITING FOR MARKER

If you have a diameter encoder, the system will require you to open and close the rollers each time the CLC-T3 is turned on. This is required for the T3 to find the calibration Marker number. The Marker number is located somewhere near the center region of travel of the rolls. You will see the '**Waiting for Marker**' message on the Main Status Screen which means to open and close the rolls. Once the Marker is found the message goes away.



MAIN STATUS SCREEN

The Main Status Screen shows the current status of the cut operation and provides the starting point to get to the other screens.



This example shows Preset "1" .
It is set to measure using the "I" encoder (independent measure wheel encoder).
The current measured length is 65 inches.
The programmed Stop length is 100 inches.
This screen also shows "L-STOP" which indicates the system has stopped the feed rolls because we have reached the desired length. L-STOP would normally not be showing at this time, since the measured length is only 65 inches and the desired length is 100. It is shown for instruction purposes only.

As the rolls feed and the log moves and get measured, the "065" number on the screen will count up or down, depending on which way the rolls are feeding.

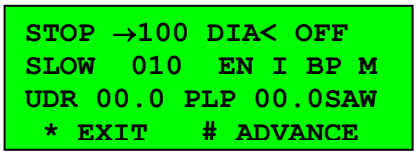
Temporarily Changing the Current Stop Setting : You can rotate the Dial to change the Stop setting. This setting is active, but it is not saved in permanent memory until it is saved through the Bucking Preset Setup Screen. This allows you to tweek the Stop setting easily until you have it right where you want it.

Selecting a Preset: Press the number on the keypad for the preset you would like to run, 1 through .9.

Call up the Preset Settings : Press the * key to bring up the Bucking Preset Setup Screen for the currently selected preset.

Call up the System Setup Screens : 'Press' the Dial Button (do not rotate it) to call up the System Setup Screens.

BUCKING PRESET SETUP SCREEN



Pressing the * key from the Main Status Screen will display the **Bucking Preset Screen** for the current preset.

The arrow points to the value (called the field) for the Dial to adjust.
The "#" (the pound key, lower right on keypad) is used to move the arrow from one field to the next.
The * (star key) is used to save the setting and exit the Screen.
The field the arrow points to will change when the Dial is rotated. The example shows the arrow pointing to the Stop field.

The Stop setting is the desired length for the cut.
The DIA< OFF indicates the Diameter Stop feature is off *(should always be OFF if there is no diameter sensor).*
The Slow setting is the number of inches before the Stop length that the system will slow down the rolls speed.
EN I indicates that Independent encoder (also referred to as center or measure wheel) are used for measurement.
BO indicates the status of the sounding beeper. N= no beep, M=log length matches cut length, 1 to 5 = inch range around the cut length that the beeper will be on.
The UDR line are settings that are unused when there is no diameter encoder.

Use the # key to move the arrow from one field on the screen to the next.
Use the * key to save the settings and go back to the Main Status Screen.

Note: A quick way to save the current preset stop setting from the Main Status Screen is to press the * key twice.

Note: If you do not want to save the changes you have made and you cannot remember your original settings, turn the power off and these current screen changes will not be saved.

INSTALLATION GUIDE

ENCODER VERSION

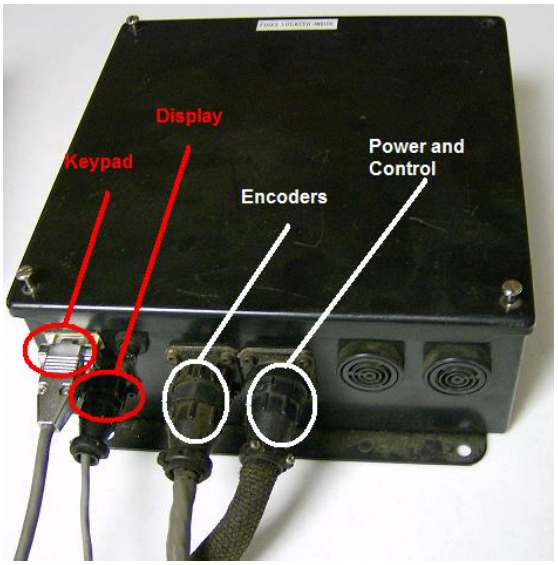
Installation Steps:

1. Disconnect Cables from Old Computer
2. Remove the Old Computer, Display and Keypad
3. Mount the New Bracket for the New Computer
4. Mount the New Computer
5. Connect the Old Cables to the New Computer
6. Enter the Settings into the New Computer

STEP 1: DISCONNECT CABLES FROM OLD COMPUTER

Disconnect the cable from the Display, from the Keypad, from the Encoders, and from the Power and Control Box. The cables from the Display and Keypad will be completely removed, but the cables for the Encoders and Power and Control Box will be connected to the New Computer.

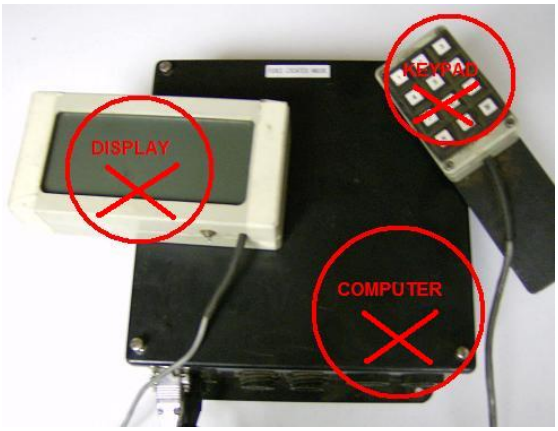
Note: If desired, the Old Keypad can still be used and connected to the New Computer. Both keypads will be functional.



STEP 2: REMOVE THE OLD COMPUTER, DISPLAY AND KEYPAD

Completely remove the Computer, Display and Keypad.

Note: If desired the Old Keypad can still be used and connected to the New Computer. Both keypads will be functional.



STEP 3: MOUNT THE NEW BRACKET

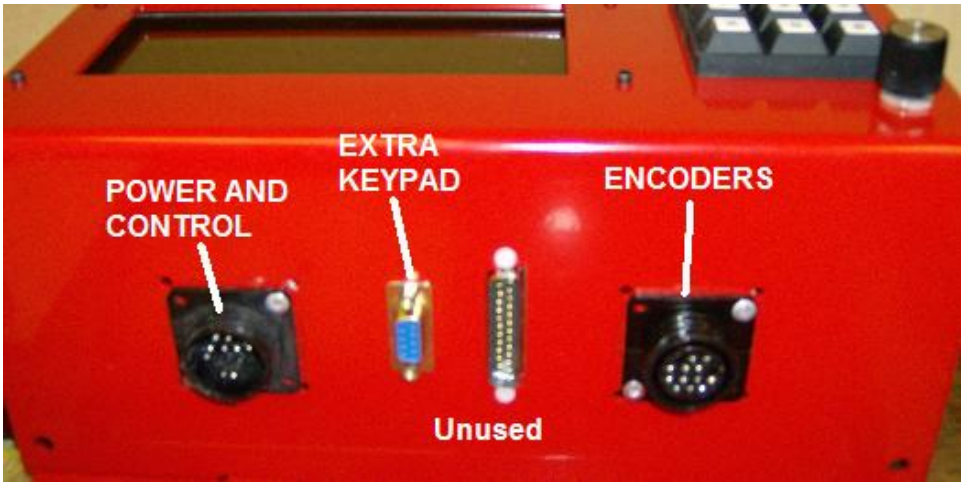
Select a location for the New Computer. You can use the Template Drawing included with these instructions to create the hole pattern for the Mounting Bracket. Secure the bracket.

STEP 4: MOUNT THE NEW COMPUTER

Attach the ball joint on the New Computer to the Mounting Bracket using the hand screw.

STEP 5: CONNECT THE OLD CABLES TO THE NEW COMPUTER

Securely attach the Encoder Cable and the Power and Control Cable to the New Computer.



STEP 6: ENTER THE SETTINGS INTO THE NEW COMPUTER

Please refer to the Quick Setup Guide for details on the settings.

Briefly:

When power is applied to the system the computer display should briefly show a power-up screen with the date and revision of the software. Several settings should be entered to configure the system for the individual machine. The following settings should be made:

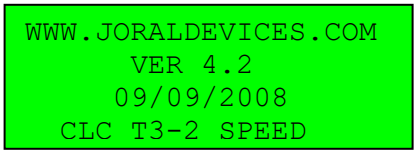
- ⇒ Disable the encoders not available on the machine by setting Adjust to 0.
- ⇒ Set the How Many Proxs to 0.
- ⇒ Calibrate the Center/Independent encoder (if present).
- ⇒ Calibrate the drive Rolls encoders (if present).
- ⇒ Calibration of the Diameter encoder (if present).
- ⇒ Enter the 9 Preset settings, or as many as you wish too.

ENCODER SENSORS
QUICK SETUP GUIDE

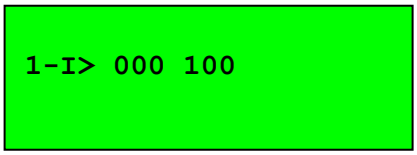
This Quick Setup Guide describes the setup of the Joral CLC-T3 system using encoder sensors for the length measurement.

Quick Guide Sections

1. **Input / Output Test**
2. **Measurement Encoder Setup**
3. **Diameter Encoder Setup**
4. **Bucking / Preset Setup**
5. **Clear All Memory**



CLC-T3 Power-up Screen



Main Status Screen

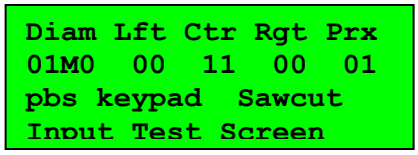
Note: There are various names used for the measuring wheel encoder, such as Independent Wheel, Center Wheel, and Measure Wheel. Each name refers to the same thing.

Section 1 – Input / Output Test

Start from the Main Status Screen, which automatically displays after the system has powered up. There are a total of 5 setup screens. The first two setup screens are for Input/Output testing.

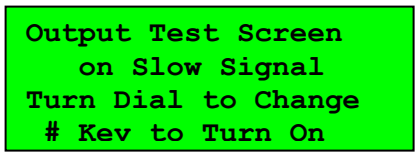
>Push Dial

The **Input Test Screen** shows the status of the input signals and the keypad into the CLC. Encoder signals will show 0 (off) or 1 (on) status for the Channel A and Channel B inputs. The screen shows the status of the Diameter encoder, the Left Drive Wheel encoder, the Center Wheel (or Independent Wheel or Measure Wheel) encoder, and the Right Drive Wheel encoder. The example shows 11 under Ctr, indicating both Channel A and Channel B for the Counter encoder are on. Keypad buttons will show as 1 to 9. Handle buttons will show the name when On. The example shows that the Sawcut input is On.



>Push Dial

The **Output Test Screen** is used to test output signals leaving the CLC. Turn the Dial to select which output to control. Push the # key on the keypad to turn the output On. The output stays on for as long as the # key is pressed. The example shows the 'Slow' output being turned On.



Section 2 – Measurement Encoder Setup

TUNE THE ADJUST SETTINGS UNTIL THE COMPUTER READOUT AND YOUR ACTUAL MEASUREMENT ARE THE SAME OR CLOSE. THIS MAY TAKE SEVERAL TRIES. WHEN TUNING, WE SUGGEST NOT TO MAKE AN ADJUSTMENT GREATER THAN 15 AT ANY ONE TIME. TIP: IF YOUR TAPE MEASURED PHYSICAL LENGTH IS SHORTER THAN THE COMPUTER READING, MAKE THE ADJUST SETTING A LITTLE SMALLER.

Note: The "(2)" number 2 in parentheses means to press the 2 key on the keypad while rotating the Dial to change the value. The number shown in parenthesis is the number on the Keypad to press while turning the dial.

The three Measurement Setup screens follow the Input/Output screens.

>Push Dial

The **Prox Switch Setup Screen** is used to inform the system how many prox sensors are used for the length measurement. *For a system that uses encoders both values should be set to 00.* ***The "(2)" number 2 in parentheses means to press the 2 key on the keypad while rotating the Dial to change the value.***

```
How Many Proxs for
Measure 0,1,2 (2)00
Direction Cmd (3)00
Prox Switch Setup
```

>Push Dial

The **Measurement Adjust Screen (sometimes called the Skew Screen)** is used to slightly adjust the length value from the encoders.

```
INDEP ADJUST(1) 20
ROLLS ADJUST(2) 00
PROX CNT/IN (3) 00
 SET UNUSED TO 00
```

INDEP ADJUST(1) is for the Independent (or Center) Wheel encoder and is typically set to 20. ***The "(1)" number 1 in parentheses means to press the 1 key on the keypad while rotating the Dial to change the value.***

ROLLS ADJUST(2) is for the the left and right drive roll encoders if they are installed. Set (2) to 00 if the left and right encoders are not available.

Set the PROX CNT/IN (3) value to 00, since this system does not use proxs.

ENCODER RESOLUTION : By default, the computer expects you are 256 pulse encoders. Some older systems may be using 200 pulse encoders.
IF YOU HAVE 200 PULSE ENCODERS. Set your Adjust value between 128 and 255. With a 200 pulse encoder a setting of 148 is identical to a setting of 20 with a 256 pulse encoder. Typically use 148.
IF YOU HAVE 256 PULSE ENCODERS, Set your adjust value between 1 and 127, typically use about 20.

Independent wheel:

Typical for 256 pulse encoders

```
INDEP ADJUST(1) 20
ROLLS ADJUST(2) 00
PROX CNT/IN (3) 00
 SET UNUSED TO 00
```

Typical for 200 pulse encoders

```
INDEP ADJUST(1) 148
ROLLS ADJUST(2) 00
PROX CNT/IN (3) 00
 SET UNUSED TO 00
```

Rolls:

Typical for 256 pulse encoders

```
INDEP ADJUST(1) 00
ROLLS ADJUST(2) 20
PROX CNT/IN (3) 00
 SET UNUSED TO 00
```

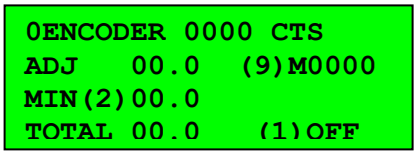
Typical for 200 pulse encoders

```
INDEP ADJUST(1) 00
ROLLS ADJUST(2) 148
PROX CNT/IN (3) 00
 SET UNUSED TO 00
```

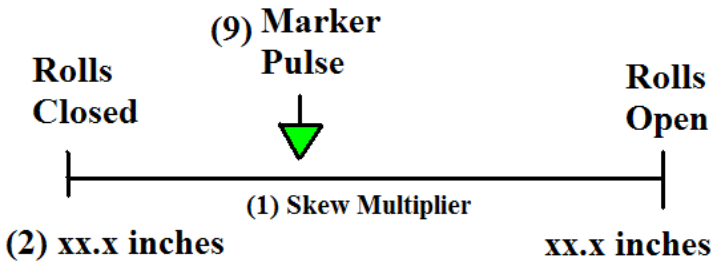
Section 3 – Diameter Encoder Setup

The last Measurement Setup screen is for the Diameter encoder. If you do not have a diameter encoder, simply make sure the (1) setting is set to "OFF".

>*Push Dial* (From the Adjustment Screen shown on the previous page)
The **Diameter Encoder Calibration Screen** is used to calibrate the diameter encoder. *Set the (1) value to OFF if there is no a diameter encoder installed.*



The system has to learn how the diameter encoder is installed. This involves a repeated Close & Open action of the Rolls and a repeated adjustment of the (1) or (2) settings to ensure the diameter is measured properly.
The diameter encoder has a Marker signal that activates at one position over the travel range of the Rolls. The system must learn this Marker position too, shown as (9) on the screen.



BEFORE BEGINNING
- DETERMINE THE ACTUAL DIAMETER IN INCHES AT ROLLS CLOSED POSITION
- DETERMINE THE ACTUAL DIAMETER IN INCHES AT ROLLS OPENED POSITION

At any time, you can start over at Step 1

STEP 1 – CLOSE THE ROLLS
Press the (9) key to clear the count and reset the Marker.
Adjust the MIN(2) setting to the actual inches at closed position.

STEP 2 – CLOSE THE ROLLS – ADJUST THE SKEW
Adjust the (1) setting, called the Skew Multiplier, from the OFF setting to a number, for example 10.

STEP 3 – OPEN THE ROLLS
Observe the value shown for the TOTAL. If this number matches the diameter at the Open position then proceed to the next step, otherwise go back to STEP 2 and adjust the (1) Skew again.

STEP 4 – FIND THE MARKER
Now that the Open and Closed positions are known the system needs to find the Marker.
- Close the Rolls
- Press the 9 key of the key
- Open the Rolls

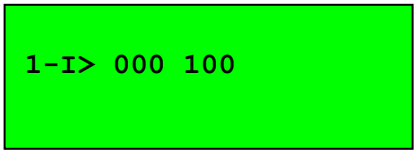
The (9)M value should have a number between 1 and 9999. If the number reads 0000, then the Marker was not found by the system and the encoder may be mis-installed or having a wiring problem.

Section 4 – Bucking / Preset Setup

There are 9 bucking presets selected by pressing 1 to 9 on the Keypad.
*Note: The Preset Number displayed on the Main Status Screen is the Preset that will be set up. From the Main Status Screen, the Stop value can be temporarily adjusted by rotating the Dial. To quickly save that Stop value, press the * key (to bring up the Bucking Preset Screen), then press the * key again (to save and exit).*

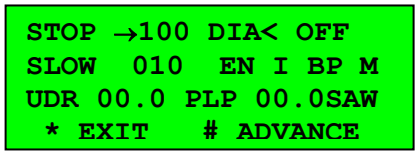
>Push '1' (number 1, upper left on keypad)

This will select Preset 1 as the current preset. This example shows Preset "1" is set to measure using the "I" (Independent) encoder with the current length equal to "000" inches and a desired Stop length of "100" inches. Your screen may differ.



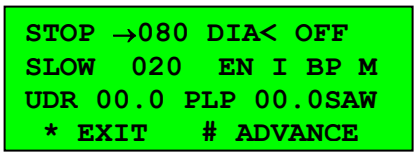
*>Push * (star key, lower left on the keypad)*

This will display the **Bucking Preset Screen** for preset 1.
The arrow points to the value (called the field) for the Dial to adjust. The "#" (the pound key, lower right on keypad) is used to move the arrow from one field to the next. The * (star key) is used to save the setting and exit the Screen. The DIA< OFF indicates the Diameter Stop feature is off. EN I indicates that the Independent measure wheel encoder are used for measurement. The UDR line are settings that are unused when there is no diameter encoder.



As an example let's set Preset 1 to Stop at 80 inches and Slow down 20 inches before it reaches the Stop value, or at 60 inches.

Make sure the arrow is pointed to the STOP value, if not press the # key until it is. Rotate the Dial to change the Stop setting from 100 to 080 inches. Press the # key 2 times to move the arrow to the SLOW value. Rotate the Dial to change the SLOW value from 010 to 020 inches. Press the * key to save the settings and return to the Main Status Screen.



Section 4 – Clear All Memory

There may be an occasion where you want to **Clear All Memory** in the CLC. This will set all the Measurement Setup and the 9 Bucking Preset settings back to factory default values. After clearing the memory you must re-enter the settings for the CLC to operate correctly.

HOW TO CLEAR ALL MEMORY

>Push and Hold # key during the Power-up Screen

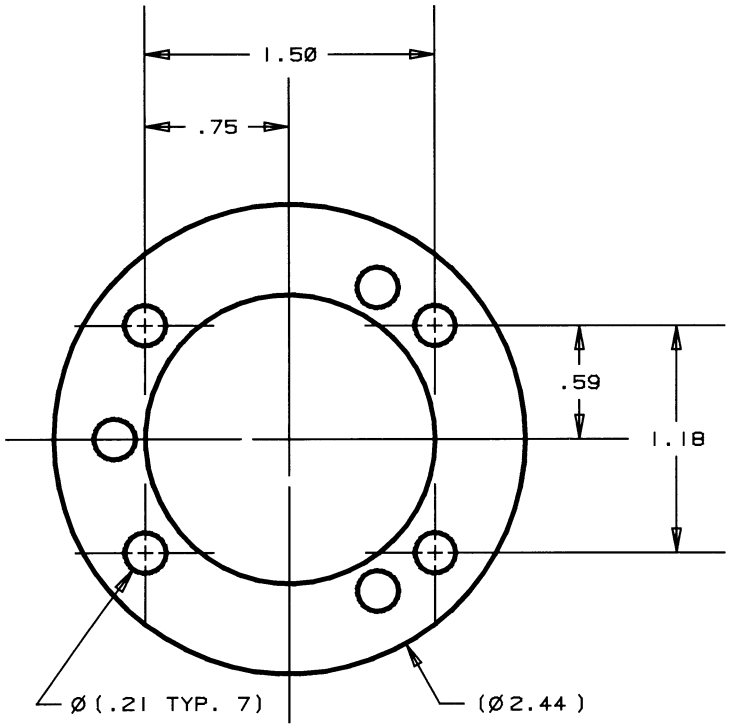
Press the # key and keep it pressed during the entire time the Power-up Screen is being displayed. The CLC will see the # key and begin clearing the memory.

While the memory is being cleared the screen will display a message to wait until the clear is completed. You can release the # key at this time. When it is done, the CLC will automatically power-up again.

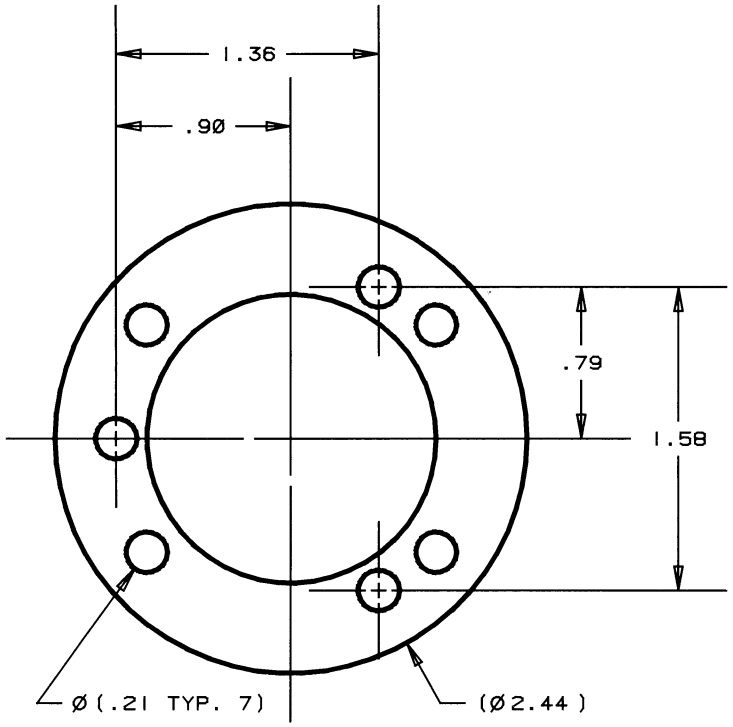
```
Please wait 30 sec
While memory is
Cleared of all the
Data & information
```

CLC-T3-2000 MOUNTING TEMPLATE

4 BOLT MOUNT PATTERN



3 BOLT MOUNT PATTERN



THIS DRAWING MAY BE USED AS A TEMPLATE.

	TAPPED MOUNTING		BOLT THROUGH MOUNTING	
FASTNER SIZE	PREFFERED TAP DRILL	NEAREST FRACTIONAL	PREFFERED CLEARANCE DRILL	NEAREST FRACTIONAL
6-32	#35	7/64	#25	5/32
8-32	#29	9/64	#16	11/64
10/24	#25	5/32	#7	13/64
10/32	#21	5/32	#7	13/64

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE DECIMAL INCH

MANUFACTURING TOLERANCES

.X	.XX	.XXX	ANGLE
±.015	±.005	±.001	1°

DESIGN: R. BLANK	DATE: 03/19/07	DRAFTING: R. BLANK	DATE: 03/19/07	JORAL DEVICES WWW.JORALDEVICES.COM
CHECKED: R. BLANK	DATE: 03/19/07	APPROVED:	DATE: 00/00/00	
B.O.M.		RELEASED:	DATE: 00/00/00	TITLE: MOUNTING TEMPLATE RAM202 BASE
CUSTOMER:		SIZE: A	SCALE: 1 TO 1	DWG NO.: JA-RAM202-MOUNT / REV.: Ø / SHEET: 1 OF 1

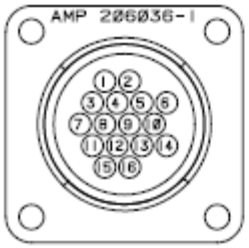
CLC-T3-2000 CONNECTOR PINOUT

ENCODER CONNECTOR

CONNECTOR HAS SOCKETS

ENCODER CONNECTOR	
PIN	SIGNAL OR FUNCTION
1	WHEEL B (AKA. INDEPENDANT OR CENTER)
2	WHEEL A (AKA. INDEPENDANT OR CENTER)
3	
4	
5	LEFT B
6	LEFT A
7	RIGHT B
8	RIGHT A
9	DIAMETER A
10	DIAMETER B
11	DIAMETER Z (MARKER)
12	GROUND
13	ENCODER POWER (+7VDC)
14	GROUND

HEAD CONNECTOR



CONNECTOR HAS PINS

HEAD CONNECTOR	
PIN	SIGNAL OR FUNCTION
1	PROX. 1
2	PROX. 2
3	MEASURE DIRECTION
4	RESET
5	DELIMB
6	STOP
7	SLOW
8	
9	
10	
11	
12	
13	
14	
15	POWER
16	GROUND

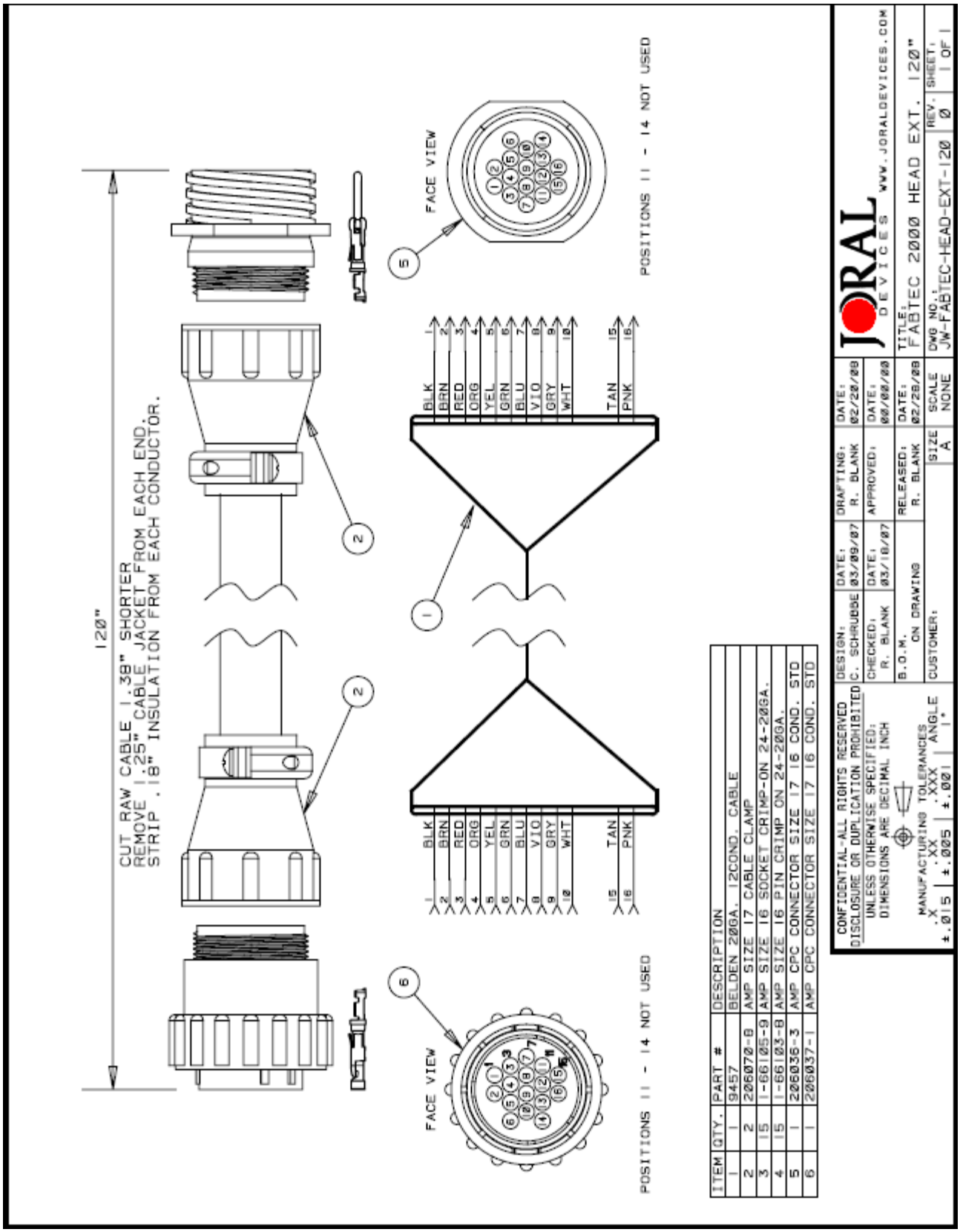
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE DECIMAL INCH

MANUFACTURING TOLERANCES

.X	.XX	.XXX	ANGLE
±.015	±.005	±.001	1°

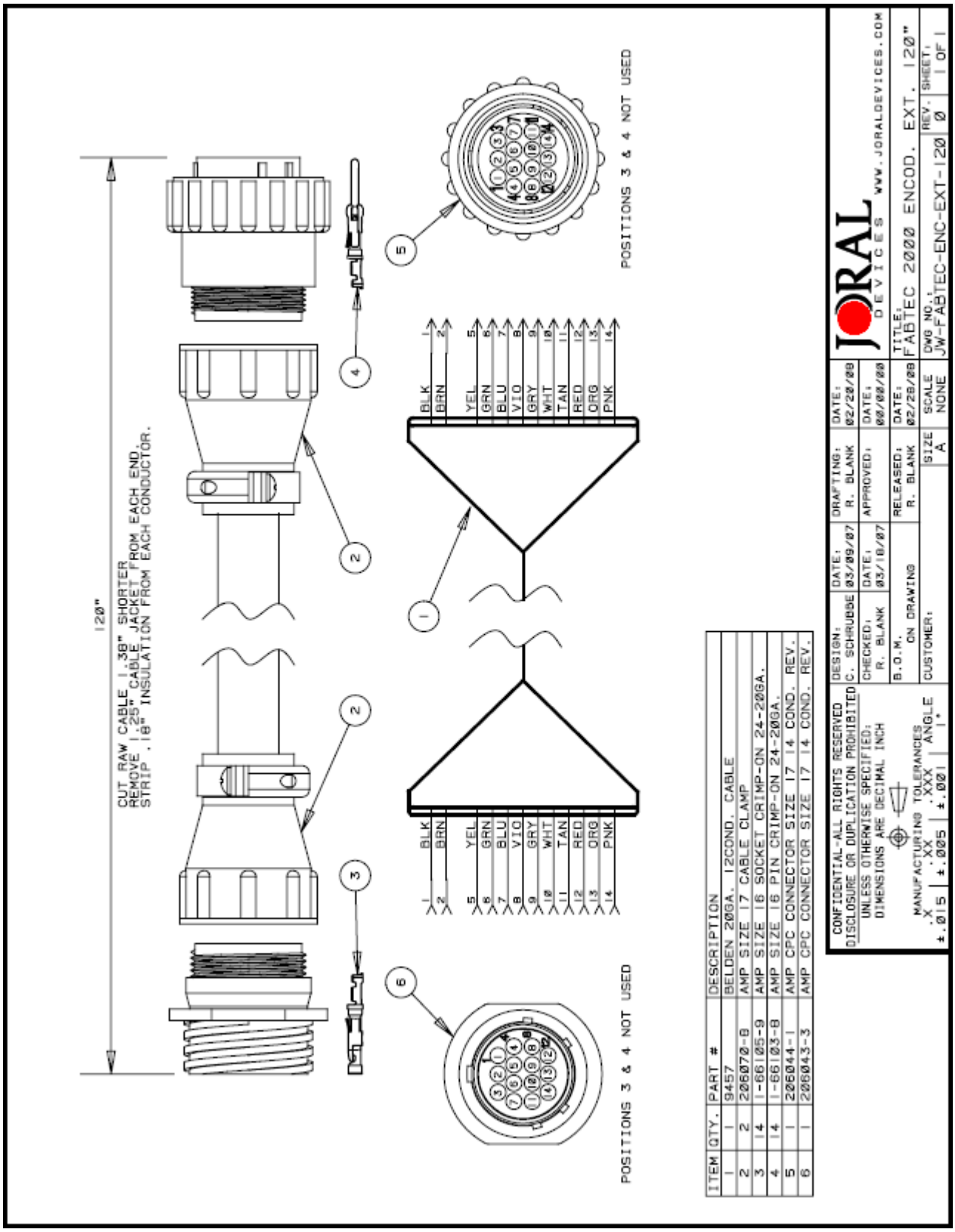
DESIGN: C. SCHRUBBE	DATE: 03/09/07	DRAFTING: R. BLANK	DATE: 03/16/07	JORAL DEVICES WWW.JORALDEVICES.COM	
CHECKED: R. BLANK	DATE: 03/16/07	APPROVED:	DATE: 00/00/00		
B.O.M. NONE		RELEASED:	DATE: 00/00/00	TITLE: FABTEC 2000 CLC PINOUT	
CUSTOMER:		SIZE A	SCALE NONE	DWG NO.: JC-FABTEC-2000-PINOUT	REV. 1 / SHEET: 1 OF 1

CLC-T3-2000 HEAD CABLE EXTENSION



ITEM	QTY.	PART #	DESCRIPTION
1	1	9457	BELDEN 20GA. 12COND. CABLE
2	2	206070-8	AMP SIZE 17 CABLE CLAMP
3	15	1-66103-9	AMP SIZE 16 SOCKET CRIMP-ON 24-20GA.
4	15	1-66103-8	AMP SIZE 16 PIN CRIMP ON 24-20GA.
5	1	206036-3	AMP CPC CONNECTOR SIZE 17 16 COND. STD
6	1	206037-1	AMP CPC CONNECTOR SIZE 17 16 COND. STD

CLC-T3-2000 ENCODER CABLE EXTENSION



ITEM	QTY.	PART #	DESCRIPTION
1	1	9457	BELDEN 20GA. 12COND. CABLE
2	2	206070-8	AMP SIZE 17 CABLE CLAMP
3	14	1-66105-9	AMP SIZE 16 SOCKET CRIMP-ON 24-20GA.
4	14	1-66103-8	AMP SIZE 16 PIN CRIMP-ON 24-20GA.
5	1	206044-1	AMP CPC CONNECTOR SIZE 17 14 COND. REV.
6	1	206043-3	AMP CPC CONNECTOR SIZE 17 14 COND. REV.