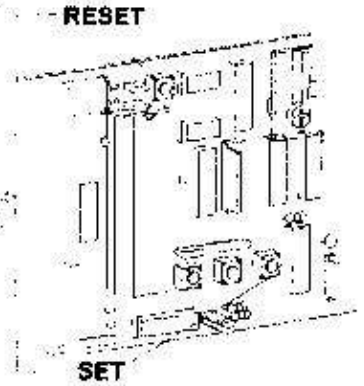
2. C2150 INITIALIZATION (learn cycle)

1st Step - Power up

Be sure the toggle circuit is complete and apply AC power to the unit.
CAUTION: THE DOOR WILL MOVE.

2nd Step - Learn cycle

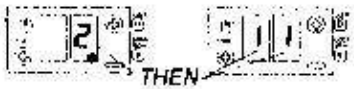
Instruct the control to perform a full learn cycle by:
- Holding down the **SET** button and the **RESET** button.
- Release the **RESET** button.
- Hold the **SET** button for an additional 5 seconds then release.



3rd Step - Version display

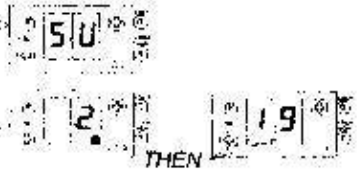
VERSION 2.18 and earlier

The display should "blink" the version number (as in 2 then 11) *The display will show the lock code (see below)

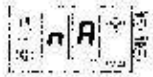


VERSION 2.19 and LATER

In version 2.19 and later, the display will show **SU**
- If **SU** does not appear, then the control was not properly reset into the full learn mode (Go back to step 2)
- The display should "blink" the version number (as in 2 then 19)



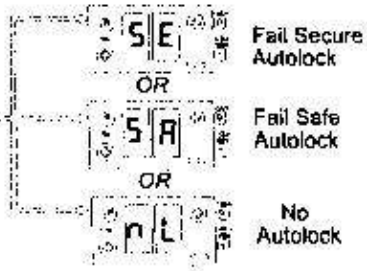
- If the display flashes **nA** like an error code, The **nA** (no Access) parameter has been turned on.



- A full learn cycle can not be completed with this security parameter in place. Consult your supervisor or the factory for authorization and instructions on how to remove this security parameter.

***LOCK CODES**

- The control will display **ONE** of the following lock codes depending the type of lock connected. (see Section 6)

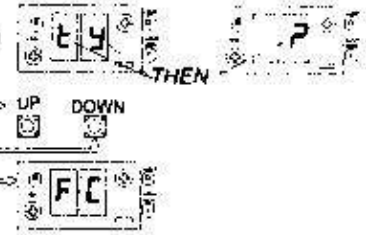


4th Step - Setting series type

NOTE: for versions earlier than 2.15 go to Step 5.

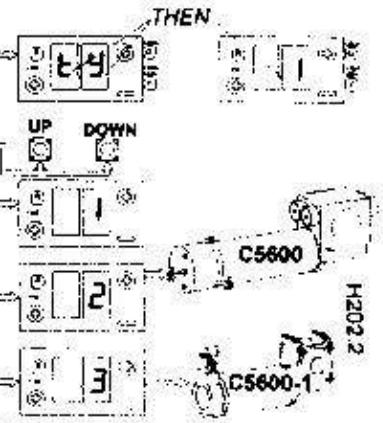
FOR VERSION 2.15 - 2.18

- The display will flash alternately tY and 1, indicating the control is ready to be set to the proper series operator.
- Press the **UP** button for 2001
- Press the **DOWN** button for 2003
- Hold the button until **FC** is displayed



FOR VERSION 2.19 or later

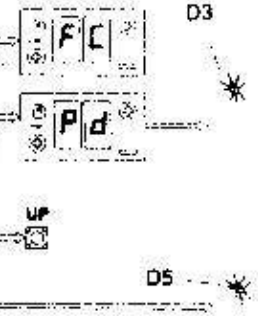
- The display will flash tY and then 1. This is the menu that selects the series type.
- Use the **UP** & **DOWN** buttons to locate the series number of the unit.
- Select 1 for 2001 (0 will default to 2001)
- Select 2 for 2003 (C5600 motor)
- Select 3 for 2003 (C5600-1 motor)
- To approve the selected type push the **SET** button



NOTE: Pressing the wrong button (wrong series) will result in the operator proceeding in a setup which should yield proper operation, but the number displayed when accessing tS (total stroke) and other stroke dependent parameters will be incorrect.

5th Step - Close stop

- The display should indicate **FC** (for first run - Finding Close stop) The door should fully close at slow speed.
- If the door moves a short distance then stops, and the display indicates **Pd**, the pre-wired safety beams or other actuating devices are stopping the door and preventing the "learn cycle". The yellow **SAF BEM** indicator will be lit.
- In versions later than 2.11, **Pd** can be overcome by holding the up button until the door closes.
- The yellow **CLS MON** (close monitor) indicator will come on when the door is fully closed.



3. ADJUSTING PARAMETERS

9th Step - Changing parameter settings

A chart of preset values is shown to the right.
If any speeds or other settings need to be changed, follow this procedure:

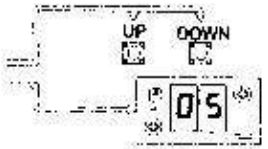
•Turn the toggle switch **OFF**
Or for versions 2.12 and up, leave the toggle **ON** and double click the **SET** button.

•The display will switch to the menu of adjustable parameters

•In versions 2.10 and up, the right decimal point will be blinking

•Refer to the chart in section 4 for a list of codes for adjustable parameters.

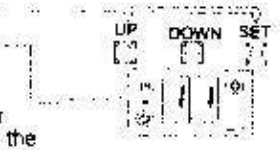
•Scroll through the parameter list using the **UP** and **DOWN** buttons until the parameter to be changed is found.



•When the parameter to be changed is found, press and hold the **SET** button.

•The display will show the current value or setting of the parameter.

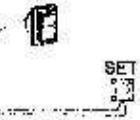
•While holding the **SET** button, press the **UP** or **DOWN** button to modify the setting.



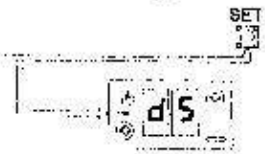
•When the **SET** button is released, the display will show the parameter that was just changed. Another parameter may be changed, or the toggle circuit turned on to check the changes just made. In versions 2.12 and up the **SET** button may be double clicked to exit the menu (toggle must be on).

10th Step -Saving new settings

•When all adjustments have been made and checked, be sure the toggle circuit is on.



•With the display reading *Sd* or *dR* press and **HOLD** the **SET** button until *dS* (data save) is displayed. All of the changes are now stored in the control's memory. **This step must be performed** or the control will revert to the default settings after a power failure.



•Set the reversing sensitivity as required using R10. **Do not** leave this adjustment at minimum. Horton recommends setting the sensitivity so the door will **reverse at 28 ft.lb. or less.**

4.ADJUSTABLE PRESET PARAMETERS

The chart below shows all the adjustable parameters for **version 2 software.**
Follow the procedure outlined in step 9 to make any necessary changes.

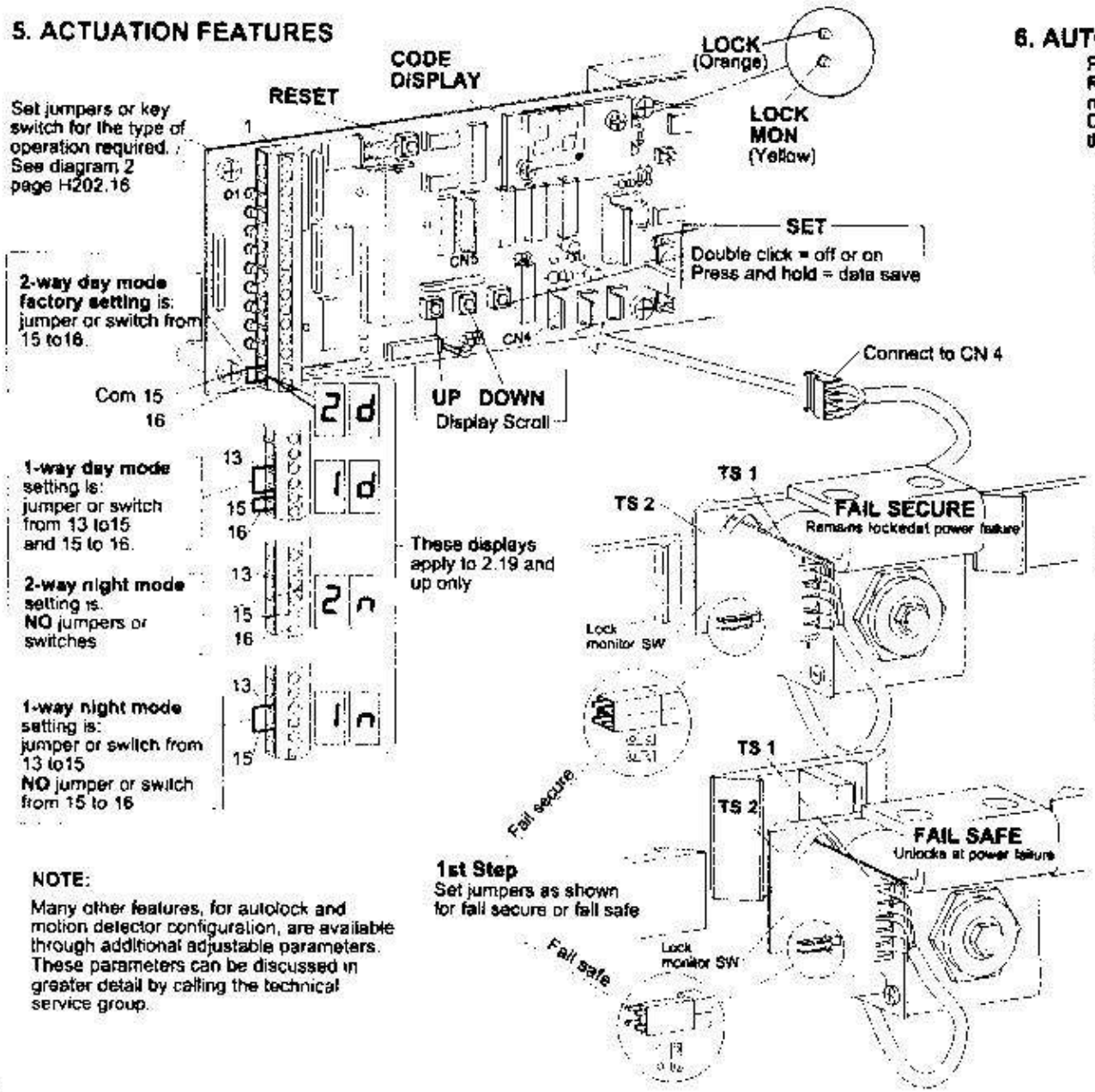
CODE	PARAMETER	FACTORY PRESET VALUE	ADJUSTS
OS	Open Speed	10	0-15
CS	Close Speed	12*	0-15
OC	Open Check	4	0-15
CC	CloseCheck	4	0-15
OU	Open cUshion	3	0-15
CU	Close cUshion	3	0-15
d1	delay time 1 (full open)	1 sec	1-60**
d2	delay time 2 (partial open)	1 sec	1-60**
AC		1 (factory set - do not change)	
AO		3 (factory set - do not change)	
rC		3 (factory set - do not change)	
CP	open Check Point	75% of stroke	50-90% ts
PO	Partial Open position	8" (adjustable in inches)	8"-ts
tS	total Stroke	(as determined by learn cycle)	12-199"
ct	cycle test	oF (no)	oF/on
RS	Auto Seal	oF (no)	oF/on
St	Stop OKon first run	on (yes)	oF/on
Hd	Heavy-duty door/motor	oF (no)	oF/on
PF	Power Fail	OP (power fail OPen)	OP/CL
Cb	Close braking	oF (on)(Version 2.03 & up only)	oF/on
br	brake on recycles	oF (on)(Version 2.03 & up only)	oF/on
LL	Lock present	oF (on if Horton lock is present)	oF/on
SA	fail-SAfe lock	oF(fail-sacure) (on fail-safe)	oF/on
UL	Unmonitored Lock	oF (monitored lock)	oF/on
dL	daytime Lock	oF (lock stays unlocked in day mode)	oF/on
L1	daytime 1-way Lock	oF (version 2.03 & up only)	oF/on
JS	Jam Sensing	on (version 2.07 & up only)	oF/on
rP	reverse on encoder Pulse	on (version 2.06 and up only)	oF/on
SP	Sidelite Protection	oF (version 2.03 and up only)	oF/on
nA	no Adjustment permitted	oF (version 2.05 and up only)	oF/on
Pn	Power fail Night mode	on (version 2.13 & up only)	oF/on

*Caution: very light doors may require a lower speed setting

**In versions 2.06 & prior, d1 and d2 adjust from 1-199 seconds.
**Beginning with version 2.07, these parameters may be set to 1-8, 10, 12,14, 16, 20, 25, 30 or 60 seconds.

•A double dash (--) is a reserved parameter that is not implemented.

5. ACTUATION FEATURES



NOTE:

Many other features, for autolock and motion detector configuration, are available through additional adjustable parameters. These parameters can be discussed in greater detail by calling the technical service group.

6. AUTOLOCK SET UP AND INITIALIZATION

Press **SET** and **RESET** simultaneously, release **RESET**, wait 6 seconds,then release **SET** - version number will displayed.
During initialization the control clears all ports and the solenoid becomes inactive.

FAIL SECURE

The C2150 looks to see if there is a contact at the lock port CN4 and if the yellow lock monitor LED is off.

If the yellow LED is off...

The control sends a pulse to retract the solenoid...

If the control gets a response back, it knows there is a fail secure lock.

If there is no response it knows there is no lock.

FAIL SAFE

The C2150 looks to see if there is a contact at the lock port CN4 and if the yellow lock monitor LED is on.

If the yellow LED is on...

The control sends a pulse to retract solenoid...

If the control gets a response back, it knows there is a fail safe lock.

If there is no response it knows there is no lock.

APPENDIX B1 CODE DISPLAYS Codes are arranged in alphanumeric order (NOTE: D = Display, P = Parameter, E = Error)

CODE	DISPLAY MEANING	TYPE	VERSION
EE	Control is braking - door always brakes when opening. Close braking can be turned on at the Cb parameter	D	2.00
BB	Control has failed - must be replaced	E	2.00
Id	Door is idle in 1 way day mode. See section 5	D	2.19
In	Door is idle in 1 way night mode. See section 5	D	2.19
2d	Door is idle in 2 way day mode. See section 5	D	2.19
2n	Door is idle in 2 way night mode. See section 5	D	2.19
AR	Door was activated or is being held open by SW 'C' input. See App. D CN2 for wiring & LED	D	2.15
AC	This parameter is factory set - do not change without consulting factory	P	2.00
Ad	Use only with APEX system - see APEX instruction G550	P	2.18
AI	Use only with APEX system - see APEX instruction G550	P	2.18
AP	To activate this APEX feature you must - turn the parameter on - do a data save, and then press reset only	P	2.18
A5	When Auto Seal parameter is turned on, the display will change to A5 and the control will try to close the door every 15 seconds	PD	2.00
AU	Use only with APEX system - see APEX instruction G550	P	2.19
bF	This indicates battery failure of C3985 monitored power failure unit - see section 14	E	
bI	Use only with APEX system - see APEX instruction G550	P	2.18
bL	bi stable Lock - no longer used	P	2.00
br	Brake on recycle turned on, the control will slow door substantially before reversing on recycle	P	2.03
Cb	When close braking parameter is turned on, the control brakes the door after close speed - recommended for heavy doors	P	2.03
CC	Close Check speed - see section 2, step 8	PD	2.00
Cd	Use only with APEX system - see APEX instruction G550	D	2.19
CE	APEX communication error - if using APEX then turn AP on	D	2.18
CL	Power fail CLose see section14	D	2.11
CP	This parameter determines stroke to open check. Adjustable from 50-90% of total stroke	P	2.00
CS	Close Speed see section 2 step 8	PD	2.00
Ct	Cycle test will cause door to open and close repealedly for test purposes	PD	
CU	Close Cushion speed (see section 2 step 8)	PD	2.00
d1	Main time delay- starts when all activate and recycle inputs clear and door is fully open	PD	2.00
d2	Partial open delay is active when SW 'A' is on (App. D) & starts when all activate and recycle inputs have cleared & door is at partial open	PD	
dA	Door idle in dAy mode (Has been replaced in later software by Id or 2d parameter see section 5	D	2.00 / 17
dF	Control failed to store parameters (control must be replaced)	E	2.00
dL	Door Locks (in day mode) when this parameter is turned on. See section 7	P	2.00
dn	This is a cycle code (see foot note) from DOWN button	D	2.15
dS	This shows a successful Data Save. See section 3 step 10	D	
ER	This is a cycle code (see foot note) from ext motec input see appendix D CN2	D	2.15
EF	Encoder Failure see section11	E	2.00
EP	Encoder Phasing error see section 11	E	2.02
Er	Use only with APEX system - see APEX instruction G550	OP	2.18
Et	Brief display indicates start of Encoder test see section 11	D	2.00
EU	Use only with APEX system - see APEX instruction G550	D	2.18

APPENDIX B2 CODE DISPLAYS

CODE	DISPLAY MEANING	TYPE	VERSION
FC	Finding Close is displayed when the door is closing to the fully closed position after a power failure or during learn initialization cycle see sect. 2 step 5	D	2.00
FO	Finding Open is displayed when the door is opening while counting encoder pulses. See section 2 step 6	D	2.00
Hd	This parameter should be turned on when using a 1/4 HP motor and a light door. (Reduces abruptness of closing)	D	2.00
hh	Use only with APEX system - see APEX instruction G550	P	2.18
hl	Use only with APEX system - see APEX instruction G550	P	2.18
HL	Use only with APEX system - see APEX instruction G550	P	2.18
HO	This parameter is factory set - do not change without consulting the factory	P	2.00
IR	This is a cycle code (see foot note) from Interior Motec see appendix D CN2	D	2.58
IF	Use only with APEX system - see APEX instruction G550	P	2.18
Ir	Use only with APEX system - see APEX instruction G550	P	2.18
IU	Use only with APEX system - see APEX instruction G550	P	2.18
J1	This indicates the control tried to run the motor & received no response from the encoder. The run was aborted to save the fuse(functional 2.09 & up)	D	2.07
J5	Turn on this parameter to save the fuse if the door is actuated while jammed or locked (see J1)	P	2.07
LI	Provides Locking in 1 way mode (see section 7)	P	2.03
LF	Automatic Lock Failed to lock (see section 8)	E	2.00
Lh	Use only with APEX system - see APEX instruction G550	P	2.18
LL	Shows lock is present (see sect. 6)	P	2.18
Lo	Use only with APEX system - see APEX instruction G550	P	2.18
LP	Indicates Loss of Pulses from encoder (see section 11)	E	2.00
nA	Access restricted call factory for assistance	PD	2.05
nL	No Lock found during initialization (see section 6)	D	2.00
nS	Door has not reached close monitor switch. See sect. 1 step 2. Check for obstructions. See appendix A step 2	E	2.06
nt	Door idle in night mode (Replaced in later versions by 1n & 2n) see sect. 2, step 8	D	2.00/17
OC	Open Check speed (see sect.2 step 8)	PD	2.00
OP	This is a Power fail Open code (see sec.14)	D	2.11
OS	Open Speed (see sect. 2 step 8)	PD	2.00
OU	Open cUshion speed (see sect. 2 step 8)	PD	2.00
PC	Indicates control is slowing for partial open	D	2.00
Pd	Set up has stopped because of activation devices (see sect 2 step 5)	D	2.00
PF	Power Failure (see sect. 14)	PD	2.00
Pn	Power failure (see sect. 14)	P	2.13
PO	This parameter determines Partial Open stroke in inches.	P	2.00
rC	This parameter is factory set - do not change without consulting factory	P	2.00
rn	Use only with APEX system - see APEX instruction G550	P	2.18
rR	This parameter causes the door to recycle if open pulses are received during closing cycle	P	2.06
rU	This is a cycle code (see foot note) from reverser circuit.	D	2.18
SA	Indicates fail SAfe lock is found during initialization (see sect. 6) Parameter should be turned on if a fail safe lock is present.	PD	2.00
Sb	This is a cycle code (see foot note) from safety beam input.	D	2.18
SE	Indicates fail SEcure lock is found during initialization (see sect. 6)	D	2.00

APPENDIX B3 CODE DISPLAYS

CODE	DISPLAY MEANING	TYPE	VERSION
SF	Encoder failed during initialization. Do encoder test (see sect. 12)	E	2.00
S I	Use only with APEX system - see APEX instruction G550	P	2.18
SL	This parameter reduces all open speed values when turned on	P	2.18
SO	Stroke zeroed is displayed after forcing relearn (see short cuts)	D	2.00
Sb	Disables *Pd* during initialization	P	2.00
SP	Provides Sidelite Protection when turned on. Reduces opening speed to open check when safety beam input is activated (see app D)	P	2.03
SU	Displays at beginning of initialization (see sect 2, step3 in ver 2.19 and up)	D	2.19
tS	Total stroke shown in inches at the end of initialization (see sect2 step 6)	PD	2.00
tY	This display is asking for the type of operator (see sect 2 step 4)	PD	2.15
Ud	Use only with APEX system - see APEX instruction G550	P	2.18
UF	Autolock has failed to unlock (see sect 8)	E	2.00
UL	When this is turned on it tells the software not to wait for the lock monitor but try to open after a brief delay. Rarely used, only for non Horton locks	P	2.00
Un	Use only with APEX system - see APEX instruction G550	P	2.18
US	Use only with APEX system - see APEX instruction G550	P	2.18

FOOT NOTES:

•The latest versions, 2.15 and up, also have a new feature called cycle / hold codes. Immediately after the door has opened to its stopping point (full or partial open), a "cycle code" will flash briefly. This code indicates which device opened the door. The cycle code is useful if a door is ghosting and you are trying to figure out which activating device is causing the problem.

•If an actuator is holding the door open, the updated software shows a "hold code" instead of *d I* or *d2*, to indicate which device is holding the door open, The displays shows the various hold codes in sequence. When all devices are clear, the display will switch to *d I* or *d2* and the normal time delay will start.

The cycle / hold codes used are:

IR Interior Actuator (pin 2 of CN 2)	**dn** down button
Sb Safety beam (pin 6 of CN 2)	**RR** Auxiliary Actuator (pin 14 of CN 2)
ER Exterior Actuator (pin 3 of CN 2)	**rU** ReVerser (cycle code only)

•While the door is at rest in the open position, pressing and holding the **UP** button will switch the display to show the last cycle code; that is, the last device that cycled (or recycled) the door. Releasing the **UP** button takes you right back to normal operation. This is a kind of "mini-history" in case you didn't see the cycle code when the control flashed it the first time.

SHORT CUTS

SELF CYCLE MODE To initiate self cycle without accessing the *cL* parameter press and hold the **UP** button then press the **DOWN** button and release them at the same time. If you haven't saved any parameters, you can get out of this mode by pressing the **RESET** button only. Otherwise you must go to the *cL* parameter and turn off and do a data save.

CYCLE DOOR Push the **DOWN** button. The door will open, and stay open until *d I* expires and then close.

LEARN NEW STROKE ONLY(Version 2.03 and later) Hold **SET** and **UP** buttons. Press and release **RESET**, continue holding **SET** and **UP** buttons for 5 seconds.The door will go through the learn cycle without resetting any other parameters.

OVERRIDE PD(Version 2.11 and later) If you encounter **"Pd"** (or other hold codes) during initialization procedure, press and hold the **UP** button to override"Pd" and allow the door to set up. This prevents you from having to disconnect motecs or safety beams.

RETURN TO THE TOP OF THE MENU(Version 2.10 and later) Press **UP** and **DOWN** together to return to the top of the menu.

PARAMETER ACCESS (Version 2.12 and later) The menu may be accessed and parameters changed by rapidly double clicking the **SET** button when the door is fully closed or opened. To exit double click the **SET** button again and the control will return to normal mode. Turning the toggle off and on will override this function.

FORCED RELEARN To be absolutely sure that you have executed a relearn of the stroke, hold the **UP,DOWN** and **SET** buttons, then press **RESET** - hold for 5 seconds and release. The display will then start to flash **SO** and will continue to do so until the **RESET** button is pressed again. Then the control will execute a relearn as described in section 2 step 3.

H202.12

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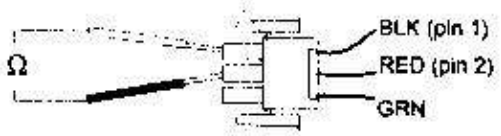
APPENDIX C MOTOR TEST

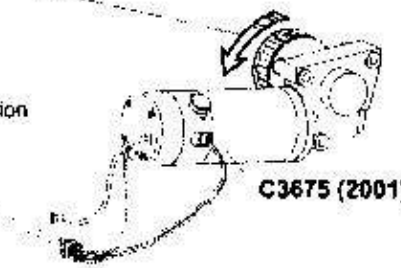
This test is conducted to determine the resistance across the motor. A low or zero resistance will cause high current draw and damage to the control.

- Place OHM meter in range to measure : 10 to 50 Ω analog Rx1 range R200 Ω digital.
- Unplug the motor and place probes in pins 1 and 2
- Read and record the resistance.
- Rotate the motor a little bit to move to the next section of the commutator. (Feel for the brushes tomake contact with the next segment on the commutator.)

Motor connection plug to the C2150

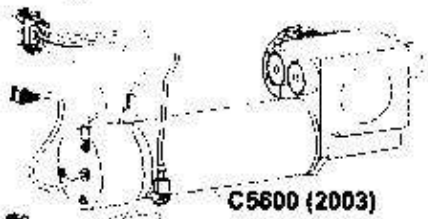


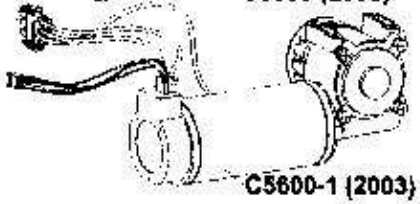
- **NOTICE**: a voltage will be induced into the meter when the motor is moved, so wait for the meter to stabilize before taking a reading.
- Continue taking readings for about 1/4 revolution of the out put pulley. (Pulley is 8.1 ratio)



- Acceptable ranges are shown by each motor type.

NOTE: A low reading is critical and will cause damage to the control.

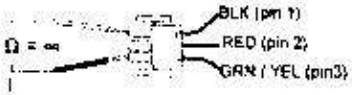




FRAME SHORT TEST

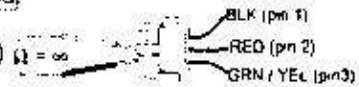
- Place the OHM meter in the range to measure at least 20,000 Ω. The meter should show infinite resistance when connected .

- Place probes in pins 1(BLK) & 3(GRN/YEL)



THEN... The meter should not move when the probes are connected.

- Place probes in pins 2(RED) & 3(GRN/YEL)



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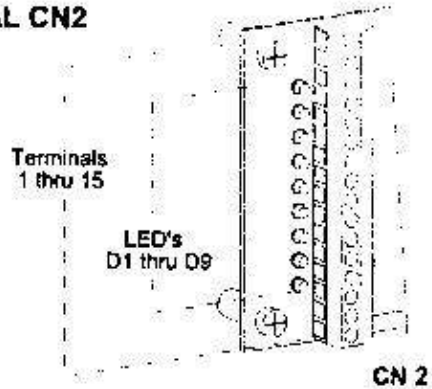
APPENDIX D TERMINAL CN2



NOTE:

⎓ This symbol indicates 24 volts DC

4. A point behind a number indicates common (ground)

LED	TERMINAL		DESCRIPTION
	⎓	1	24 VDC
D1 (G) INT MOT		2	Interior Acitvation
D2 (R) EXT MOT		3	Exterior Activation
		4.	Common
	⎓	5	24 VDC
D3 (Y) SAF BEM		6	Safety beam & sidelite protection
		7.	Common
D4 (G) TOG SW		8	Toggle switch
		9.	Common
D5 (Y) CLS MON		10	Close monitor switch
		11.	Common
D6 (G) SW A		12	Partial open cutoff
D7 (Y) SW B		13	1 Way (Closed for one way- light on)
D8 (R) SW C		14	Auxiliary activation
		15.	Common
D9 (O) KEY SW		16	Day night mode (closed for day mode- light on)

H202.13

DIAGRAM 2 ACTUATING and CONTROL SWITCH CONNECTIONS