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Intelift™ System
Ingersoll-Rand
Intelift Balancers

OVERVIEW

Balancer **O**peration

Intelift **O**peration

Installation

Troubleshooting

Preventive **M**aintenance

MODULE PREVIEW

•What is the function of the encoder wheel?

✓ Sense load position ___Decipher messages
___ Raise the load

•What is the green button on the Intelift pendent for?
___ Intelift Mode ___ Power Off
✓ Power On

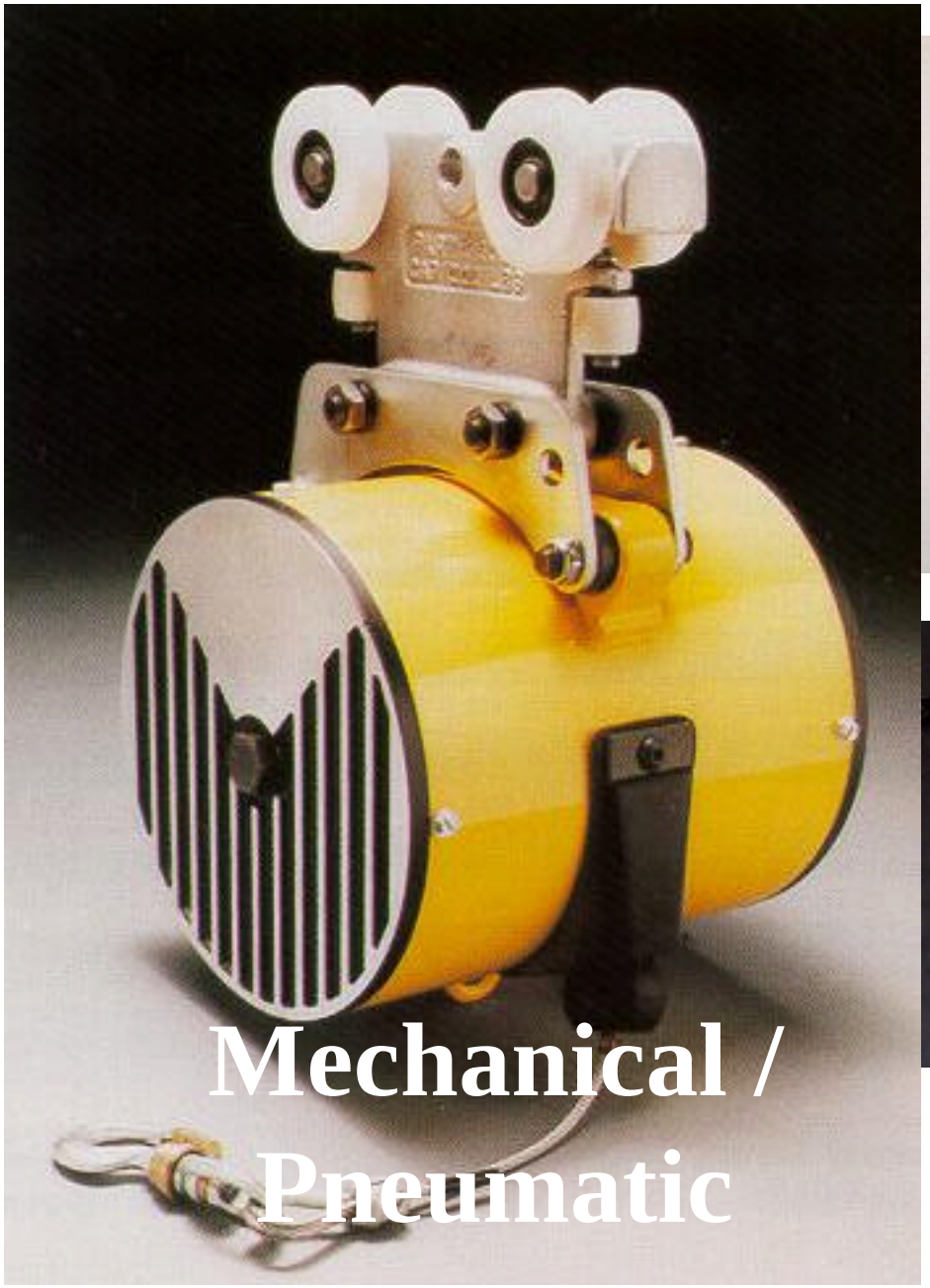
•If air pressure is released from the piston chamber, the load will _____.
___ Raise ✓ Lower
___ Stay in place

•The control best suited for a lifting, balancing and dumping applications is the _____ control.
___ ZA ___ BA ✓ Intelift

CAPABILITIES

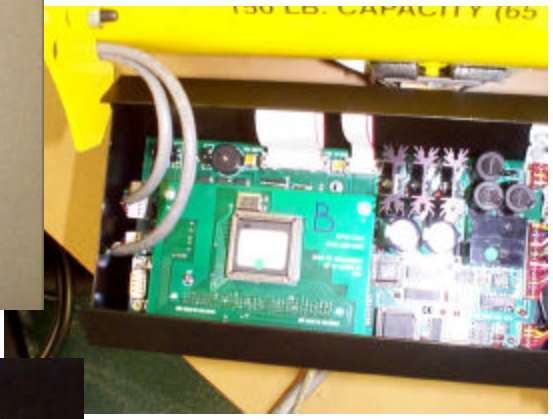
Intelift Balancer	Function	Air Balancer
✓	Dynamic Lift & Lower	ZA Control
✓	Single Load Balance	BA Control
✓	Multiple Load Balance	EA Control
✓	Dump Capability	NONE
✓	Smart Drop Capability	NONE

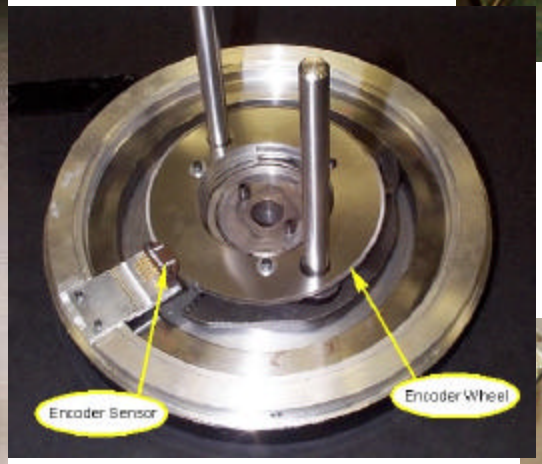
Aspects of Intelift Balancers

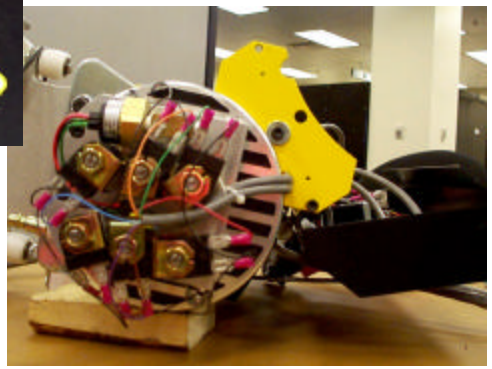


Mechanical / Pneumatic

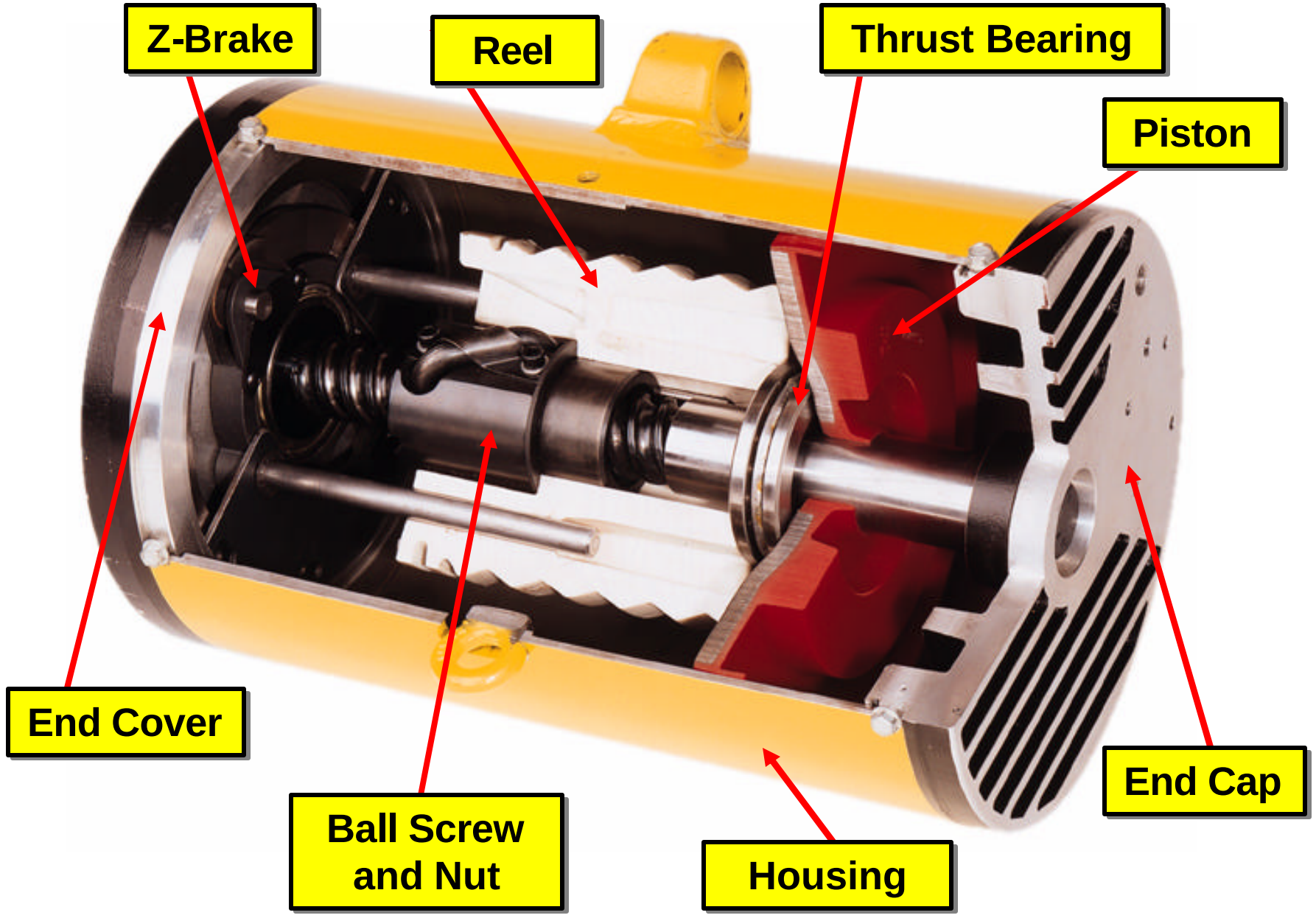
Electronic



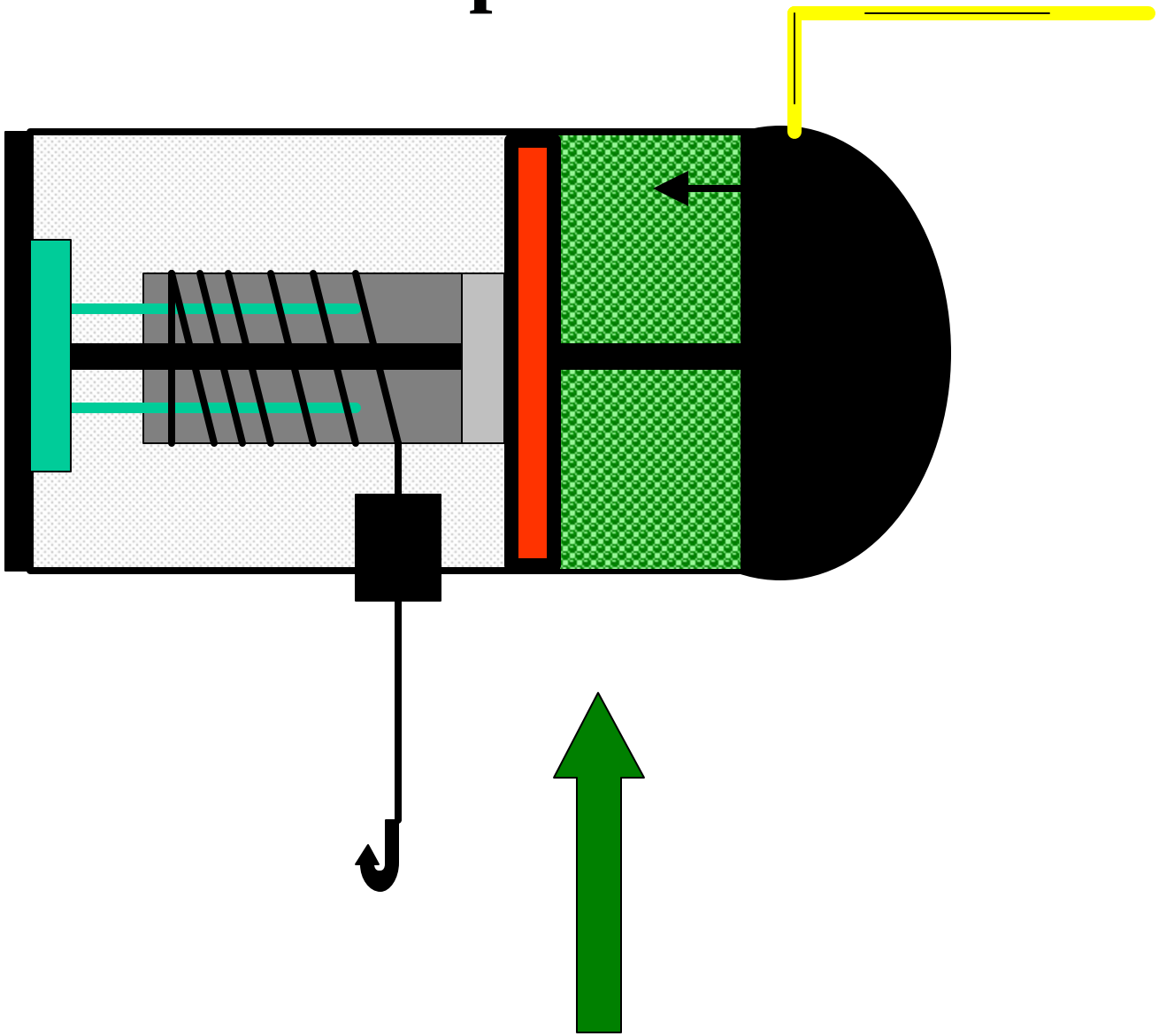




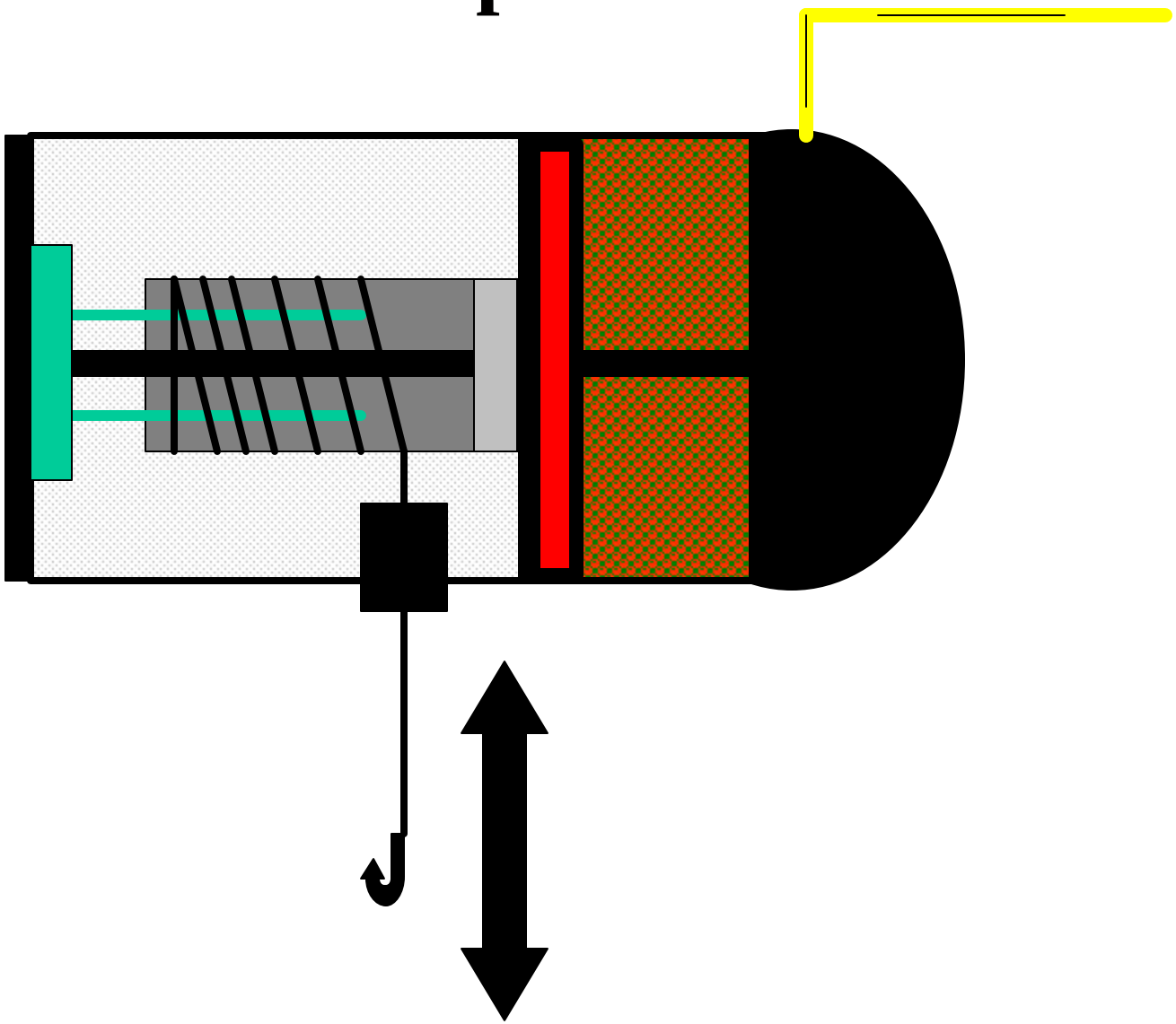
Mechanical Components



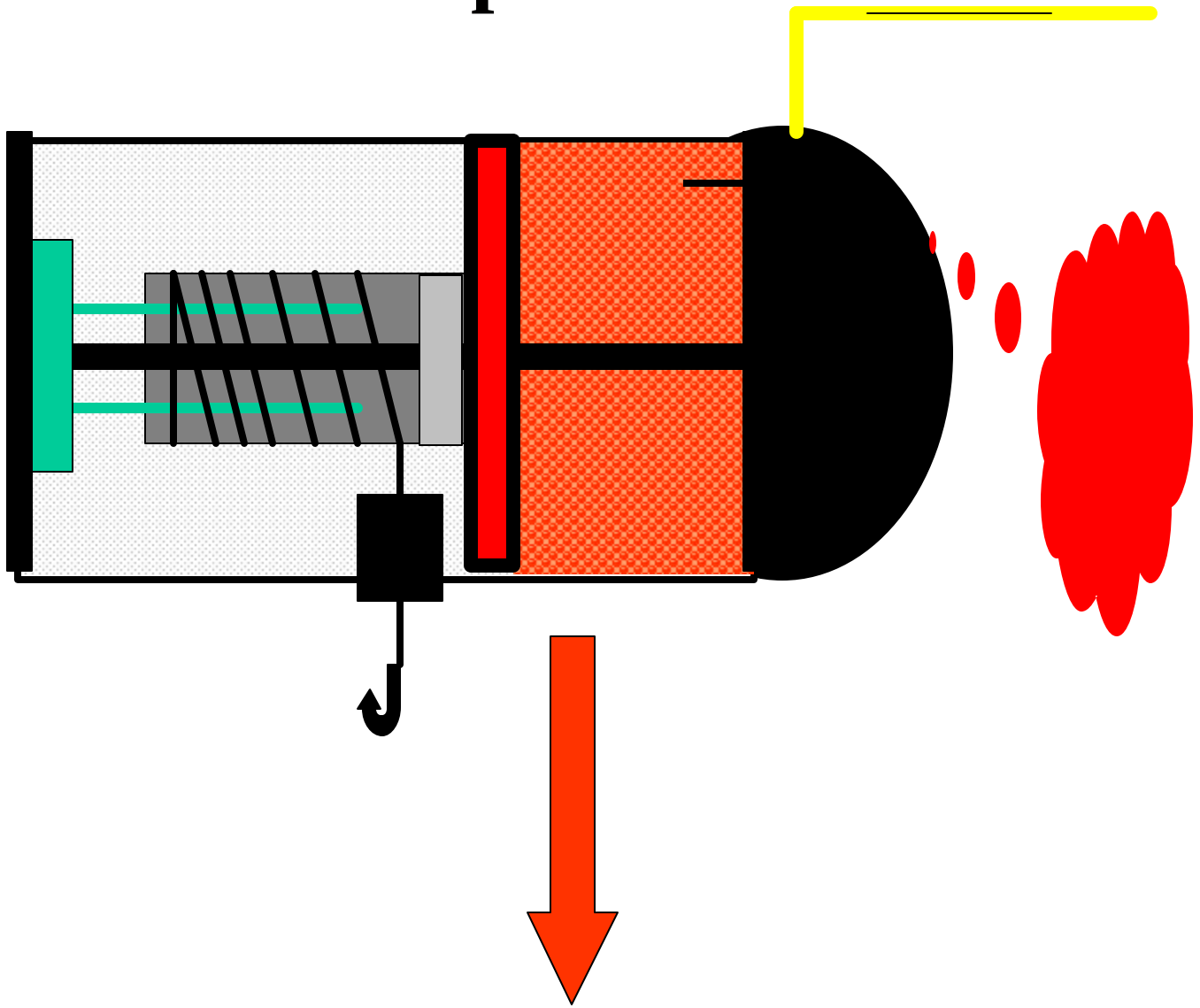
Pneumatic Operation



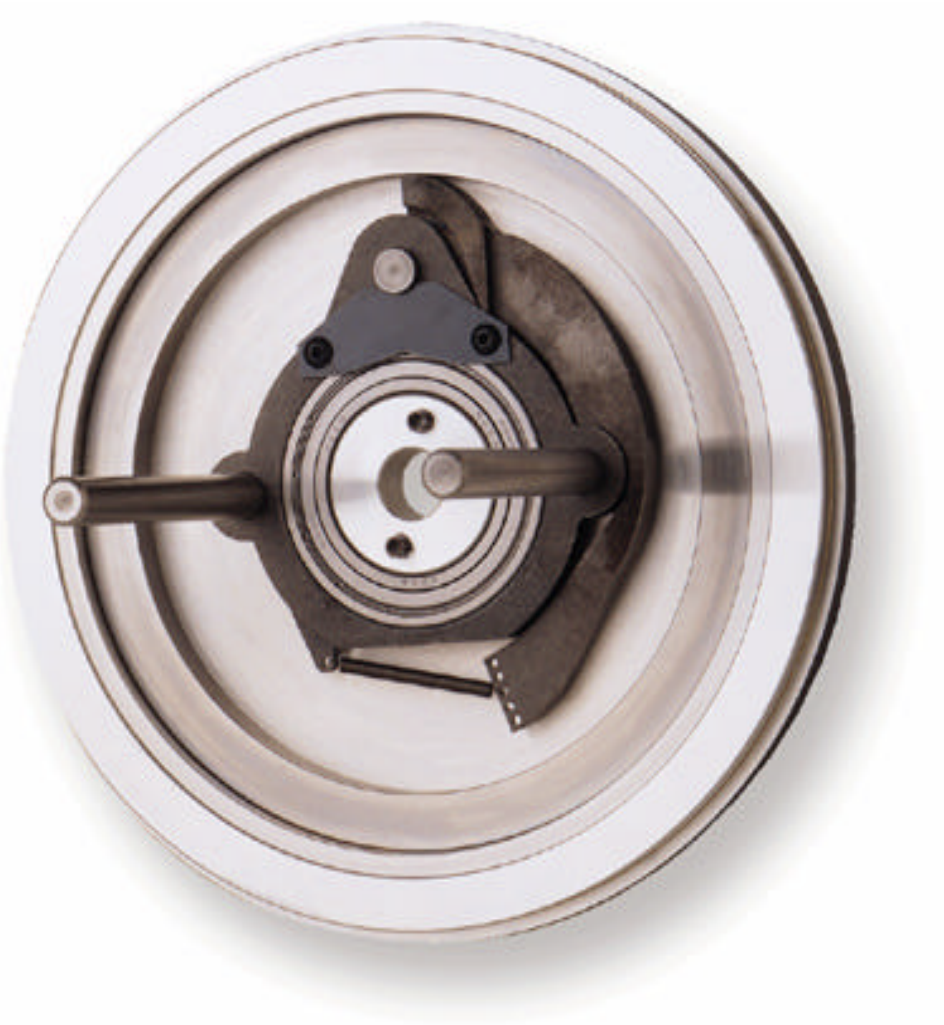
Pneumatic Operation



Pneumatic Operation

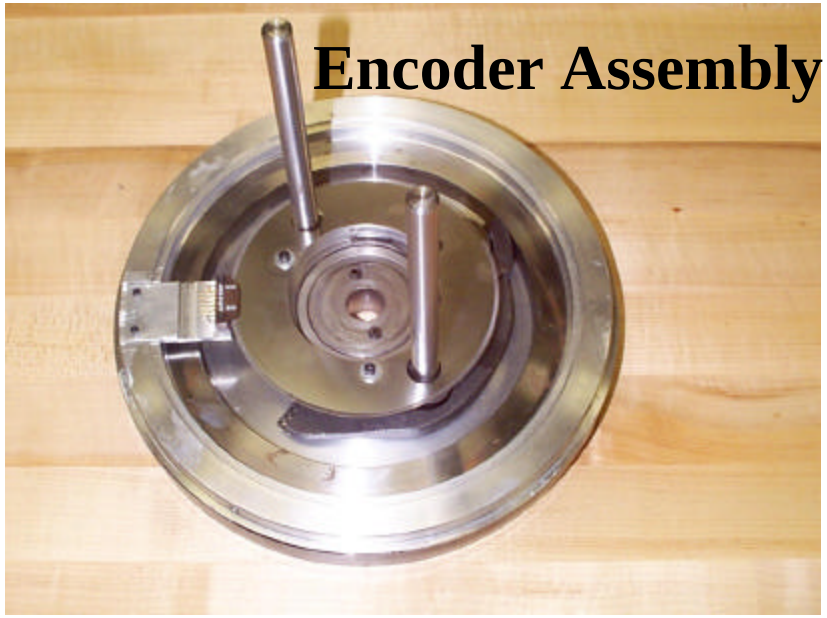


Z-Brake

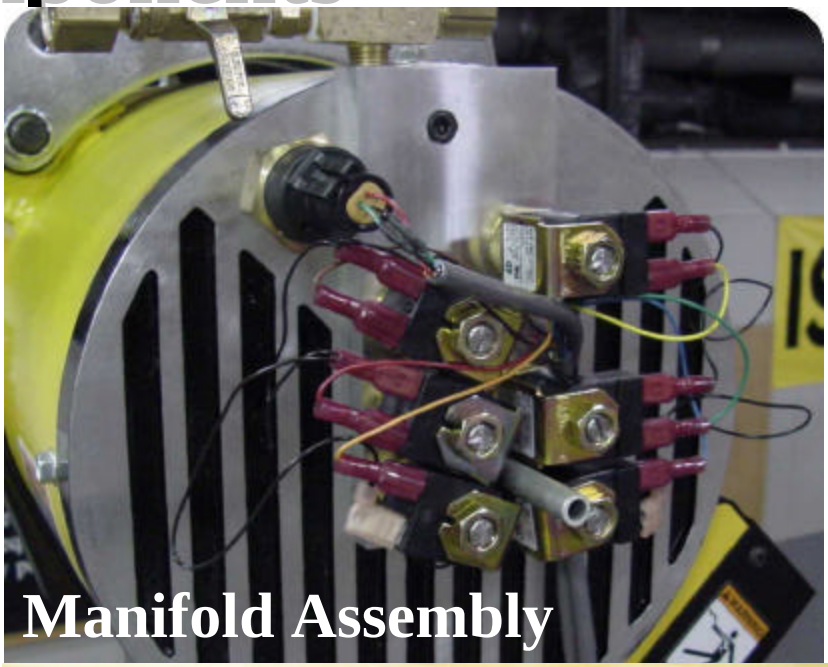


- **Safety Retraction System**
- **Centrifugal Force**
- **Prevents Excessive Upward Acceleration**
- **Standard On All Units Except 50 lb. Tool Balancer**
- **Patent No. 5,522,581**

Intelift Components

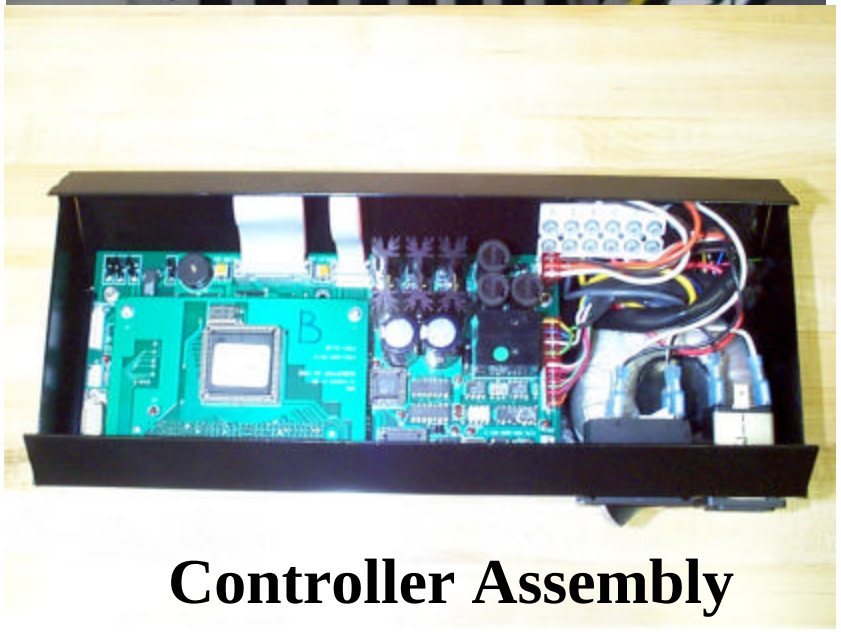


Encoder Assembly



Manifold Assembly

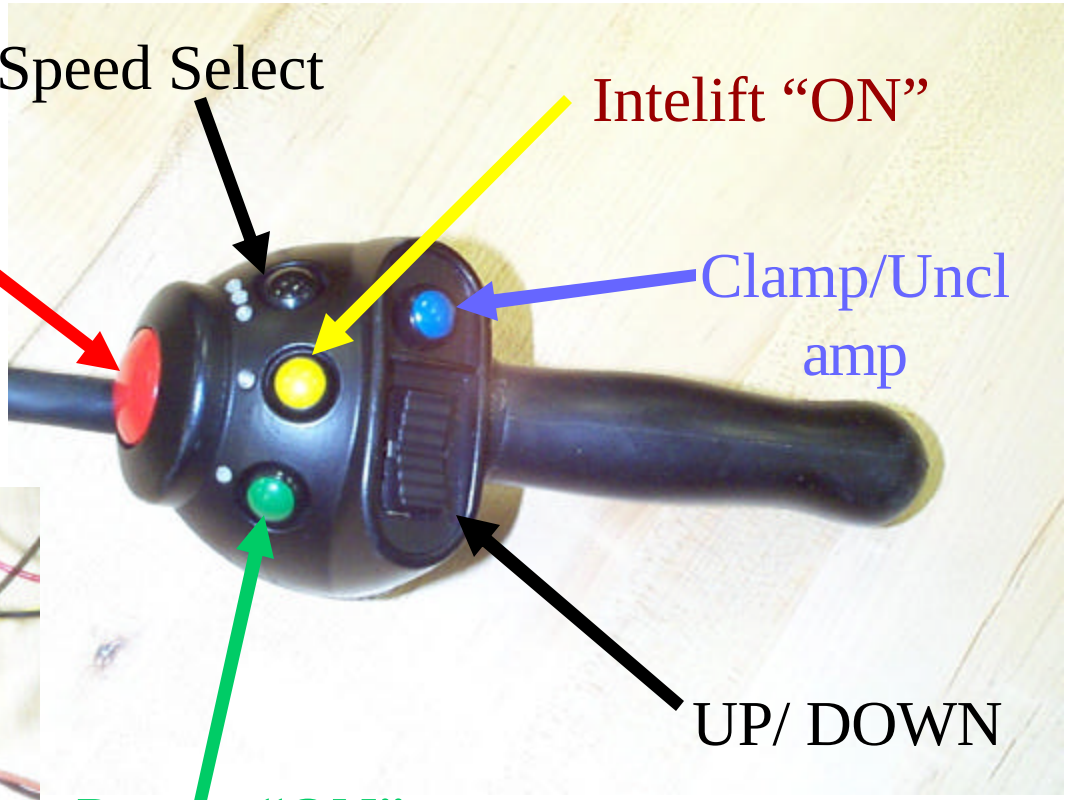
Pendent Assembly



Controller Assembly

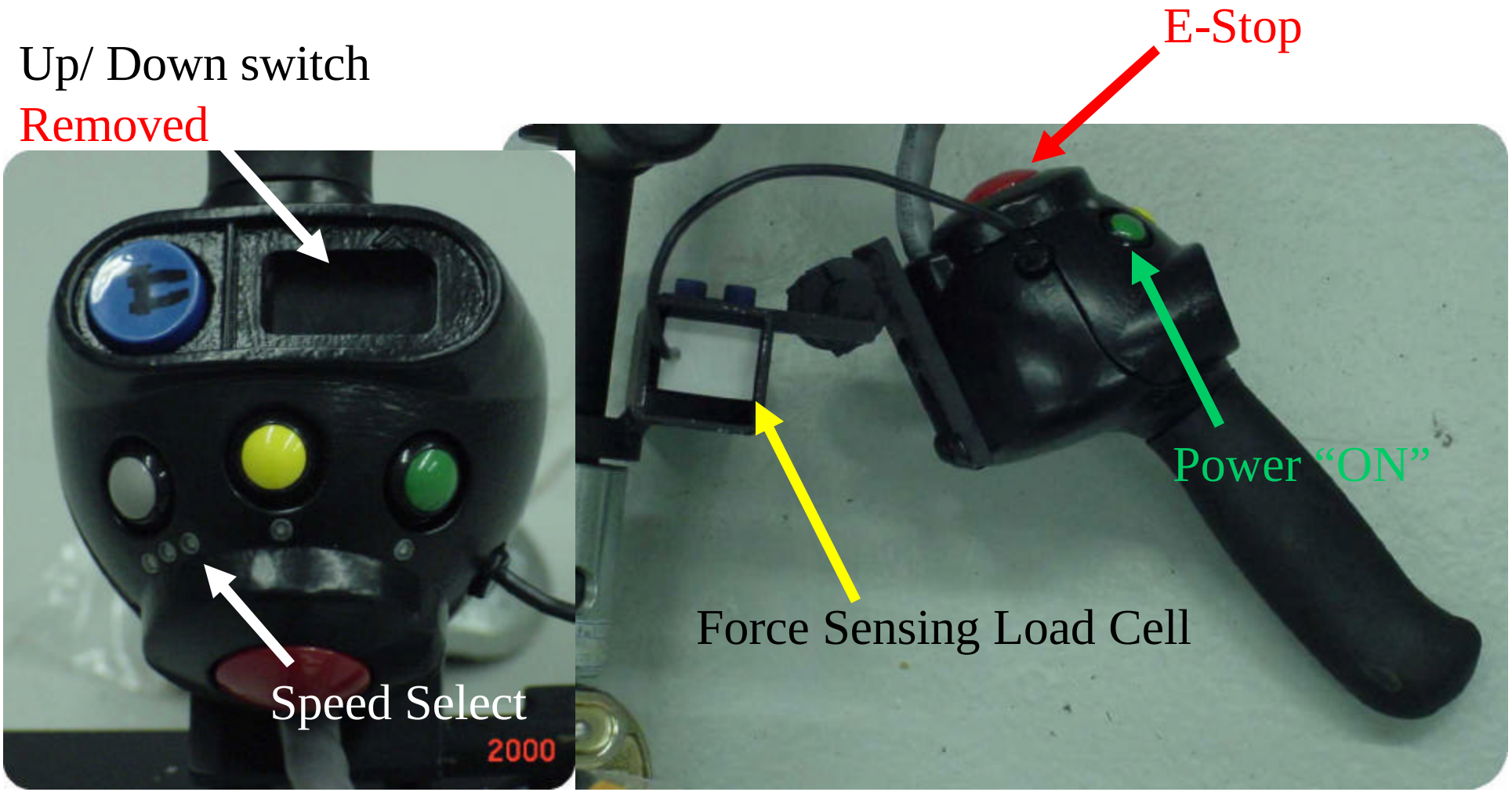
Intelift Pendent

Operator Interface to Intelift

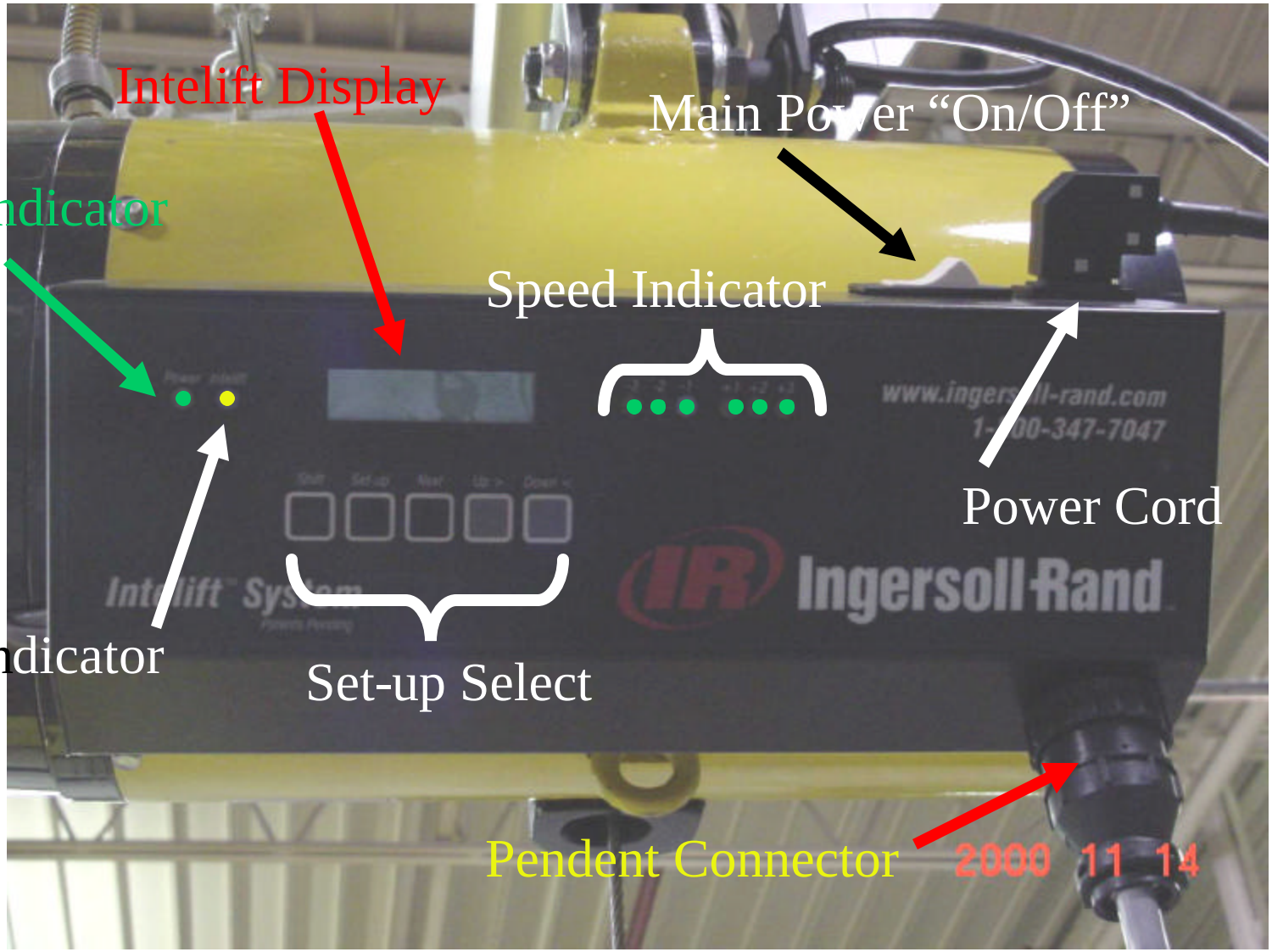


Intelift Force Sensing Control Handle

Operator Interface to Intelift



Intelift Controller
Processes Operator Inputs



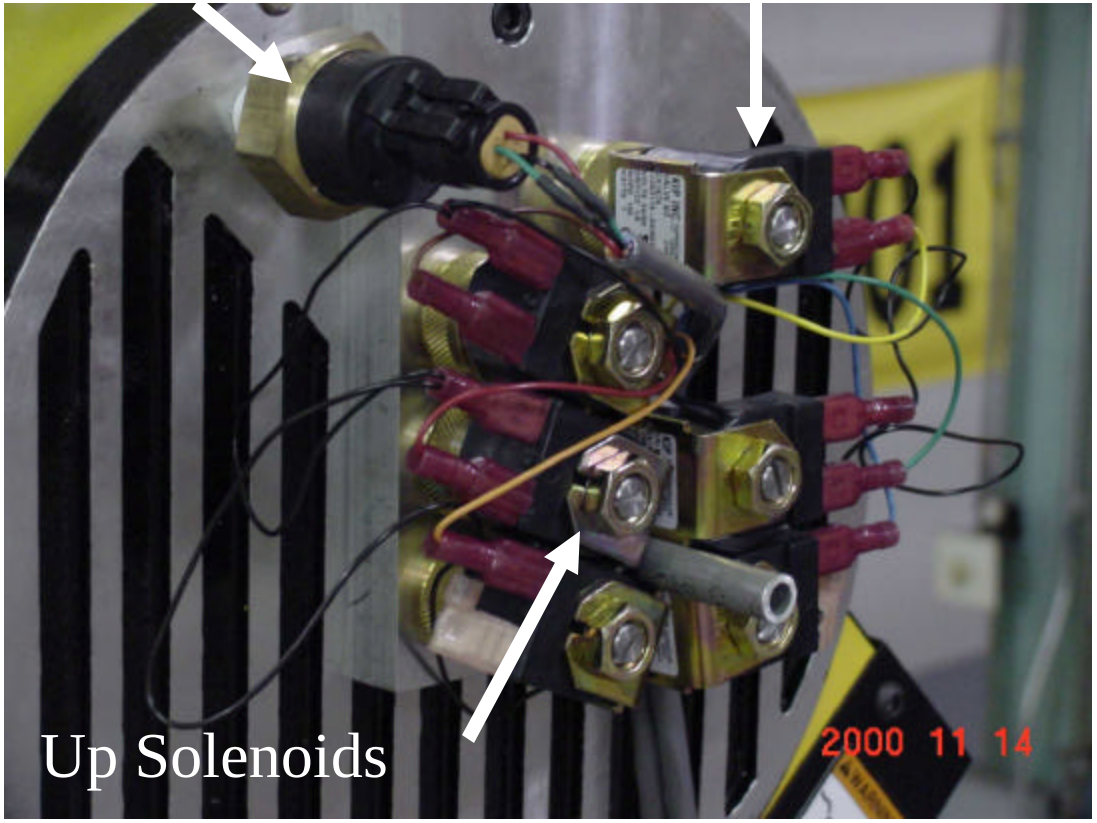
Intelift Manifold

Senses Pressure/ Controls Air to Balancer

Air Supply

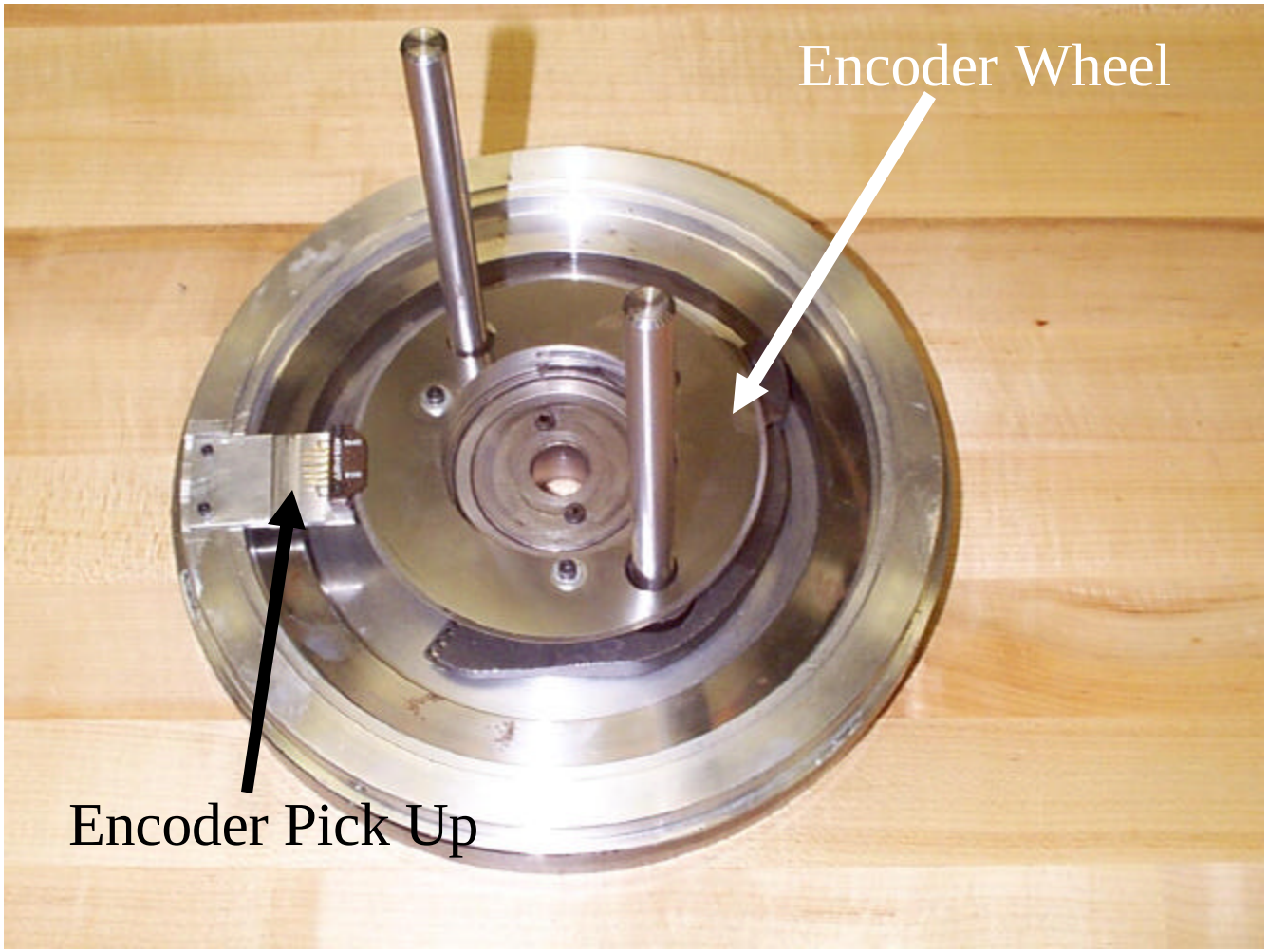
Pressure Transducer

Down Solenoids



Intelift Encoder

Senses Balancer Position



EXERCISE

INTELIFT COMPONENTS

Intelift Modes

Dynamic Lift / Lower

The rocker switch on the pendent are used to raise and lower the load.

Dump

The handling device will maintain vertical position as the load increases or decreases.

Float

The load is manipulated by hand. The pressure sensor controls air into and out of the balancer.

Smart Drop

The load will lower until only the weight of the handling device is supported. The clamp opens automatically to release the part.

Intelift Installation

1. Preparation

Visual Inspection
Electrical Festoon
Air Supply Festoon

(Configure Festooning Properly)

2. Installation

Install Suspension Kit
Install End-Effector
Connect Control Handle Kit
(Coiled or Straight)
Connect AC Power

3. Initial Setup

Select Operational Mode
Tare Control Handle and End-Effector

4. Functional Testing

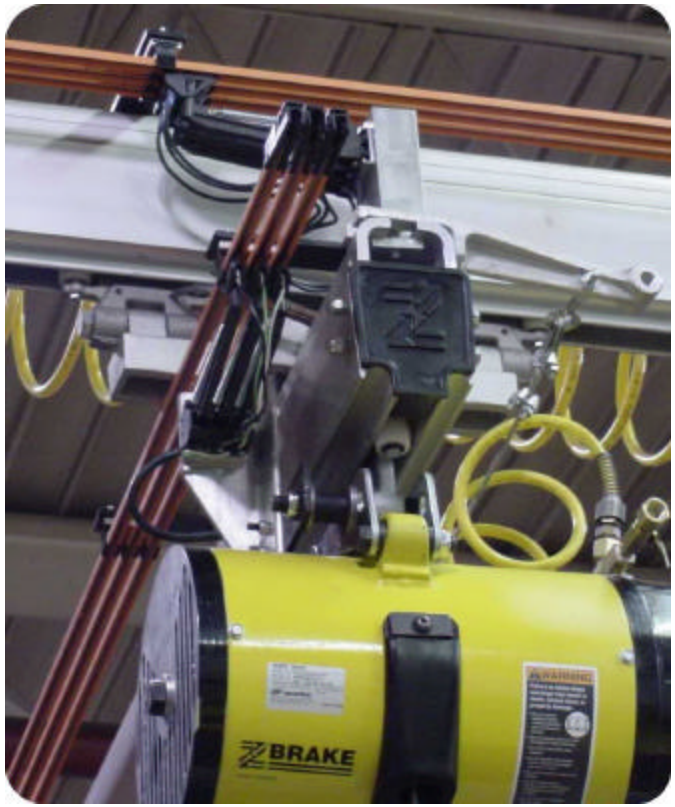
Perform QA Test
Connect Air Supply
Test System Performance
with Intended Task and Load

Intelift Installation

1. Preparation

1. Visual Inspection- Check to ensure equipment has no visible damage.

2. Electrical Festoon
Insul8- is the recommended festoon



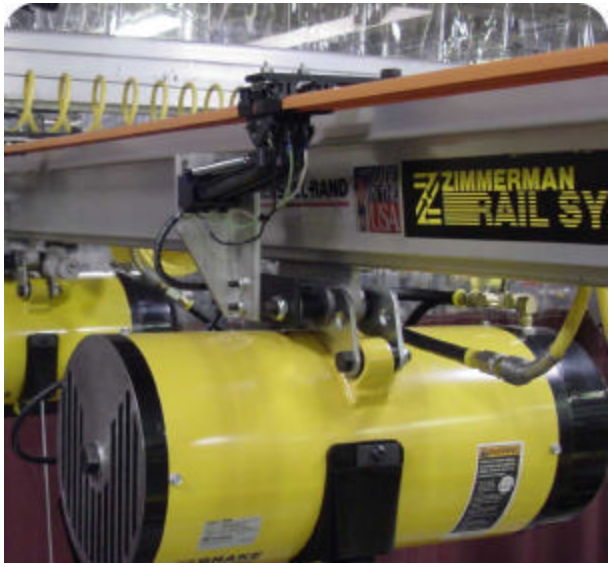
3. Air Supply Festoon
Use a pre-coil tube assembly

Intelift Installation

2. Installation

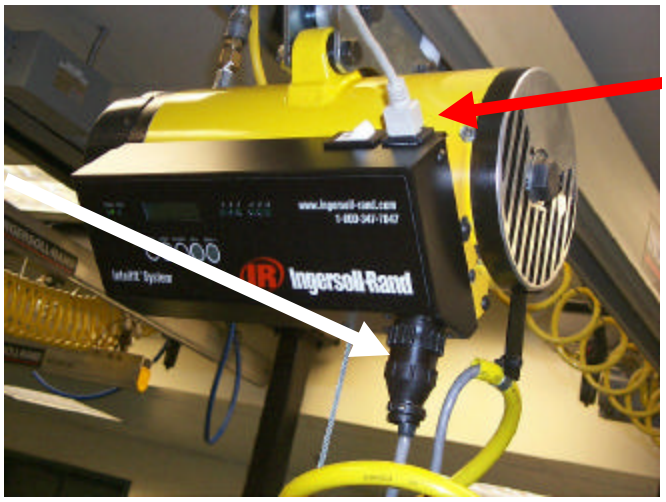
1. Install Suspension Kit

2. Install to Rail



3. Install End-Effector

4. Connect Pendent



5. Connect AC Power

EXERCISE

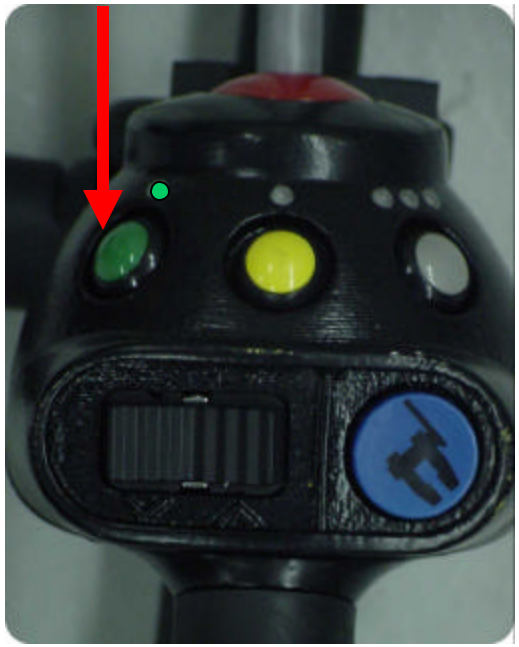
INTELIFT Modes/ Installation

Intelift Installation

3. Initial Set up

1. Switch Main Power On and air supply

2. Depress Pendent Power On



Intelift Installation

Keypad Buttons

"Shift"- Initiates "QA" Testing

"Setup" - Enters and exits you out of the Setup menu

"Next" - Steps through each of four Intelift functions which may be changed

- Control Mode
- Intelift Mode
- Control Handle Tare
- End Effector Tare

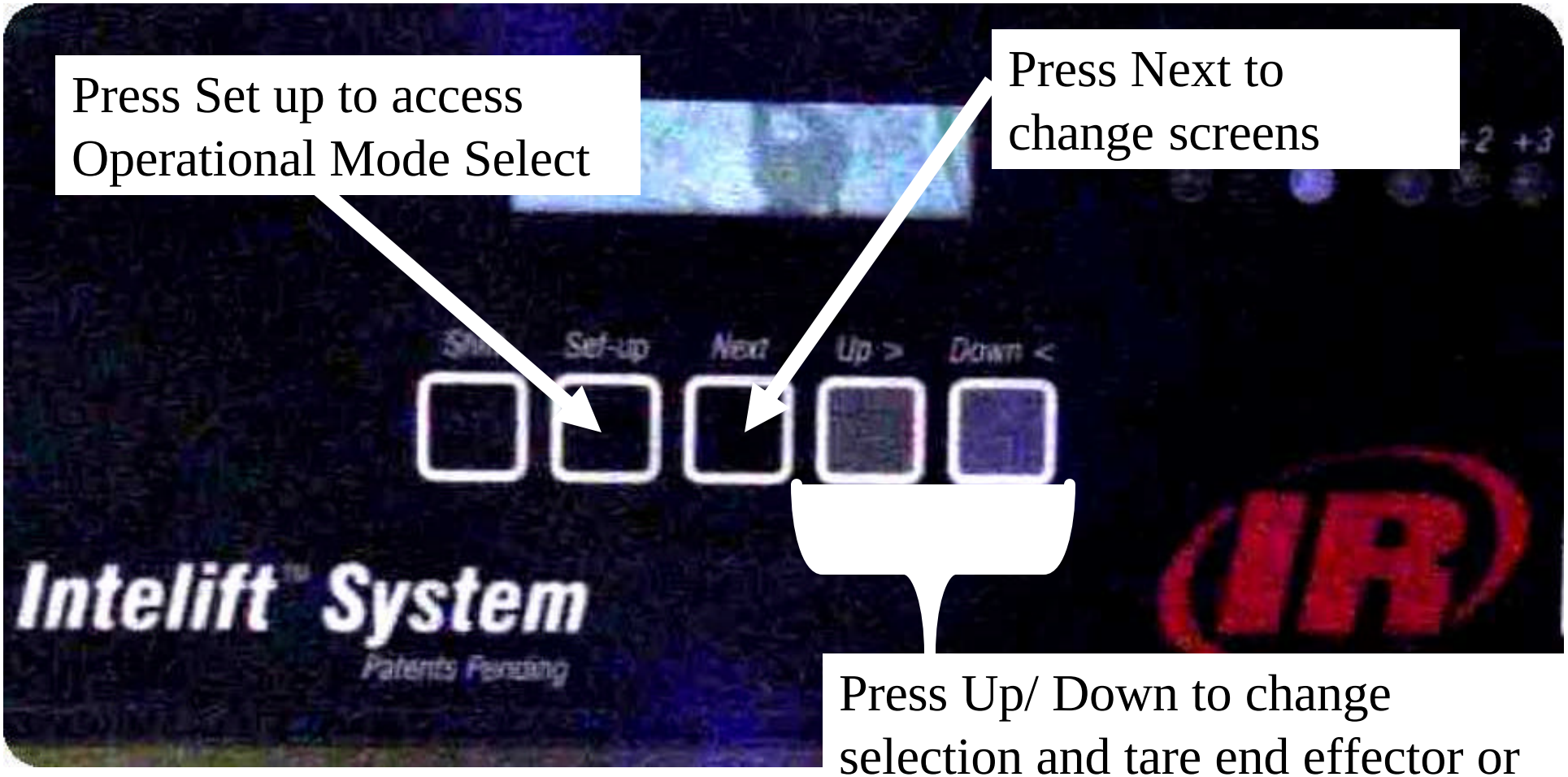
"Up/Down" - Selects value or entry for function

Intelift Installation

3. Initial Set up (cont.)

3. Select Operational Modes

4. Tare End Effector/ Pendent



Intelift Installation

4. Functional Test

- **Dynamic Lift/ Lower**

Use the rocker switch to maneuver to the part.

Engage the part.

Depress the UP rocker switch. The end effector and part should lift.

Depress the speed select button until the load moves at a comfortable speed.

Depress the DN rocker to verify that the speed is correct.

Intelift Installation

4. Functional Test (cont.)

- **Force Sensing Control Handle**

Move the end effector to the part handled.

Push down on the control handle and engage the part.

Lift up on the control handle and raise the load.

The load should move smoothly with minimal effort.

Intelift Installation

4. Functional Test (cont.)

- **Float Mode**

Push the Intelift button on the pendent.

Engage the part.

Raise the load by lifting the end effector.

Move the load up/down by hand not using the pendent.

The load should move smoothly with minimal effort.

Intelift Installation

4. Functional Test (cont.)

- **Smart Drop Mode**

Push the Intelift button on the pendent

Move the end effector to the part handled.

Engage the part.

Raise the load approximately 6 inches.

Press and release the clamp/unclamp button.

Smart Drop- the load should lower the 6 inches and release the part when supported.

Intelift Installation

4. Functional Test (cont.)

- **Dump Mode**

Push the Intelift button on the pendent

Move the end effector to the part handled.

Engage the part.

Raise the load approximately 12 inches.

Begin dumping the load.

Dump- the load should remain in the same position as the weight decreases.

EXERCISE

INTELIFT Set-up/ Functional test

Intelift Troubleshooting

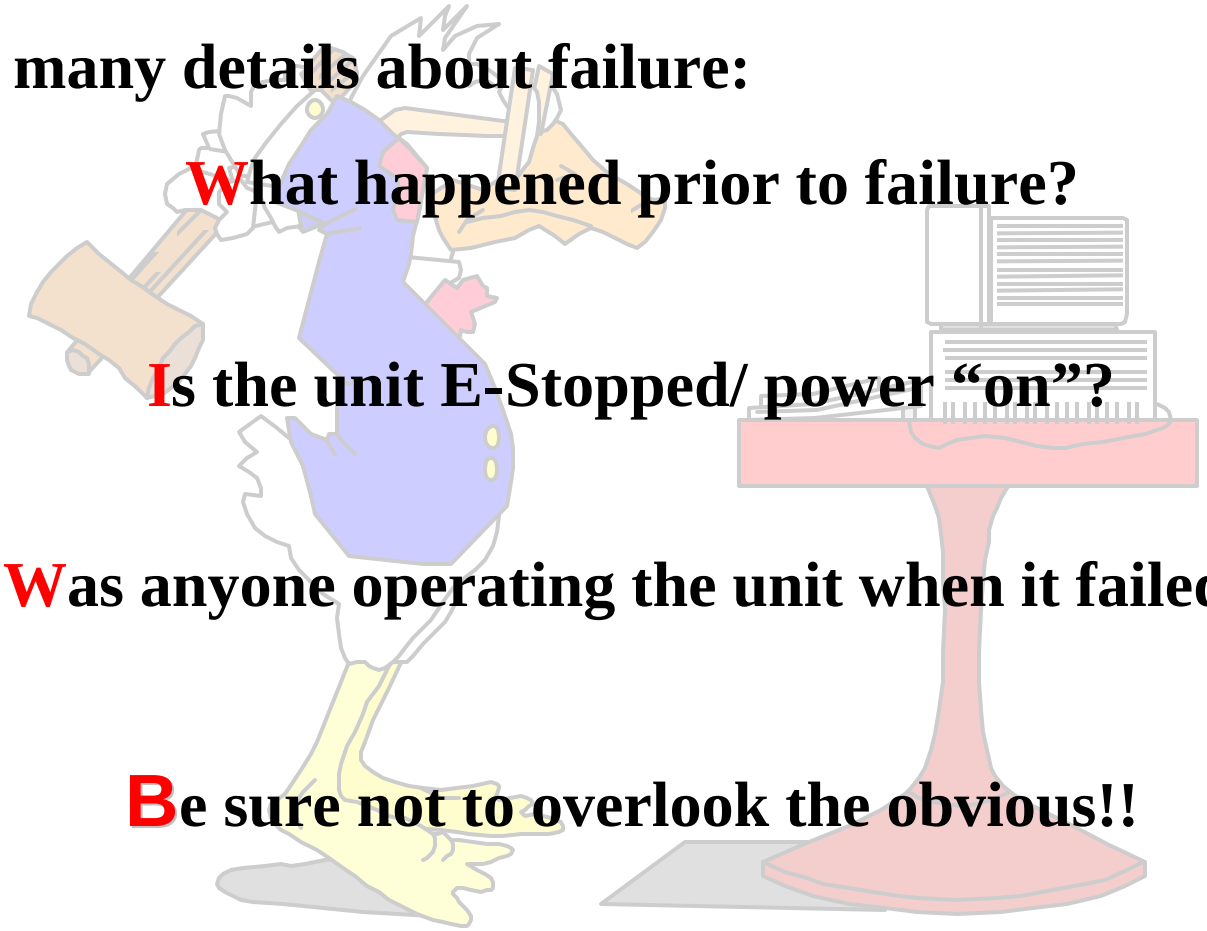
Find out as many details about failure:

What happened prior to failure?

Is the unit E-Stopped/ power “on”?

Was anyone operating the unit when it failed?

Be sure not to overlook the obvious!!

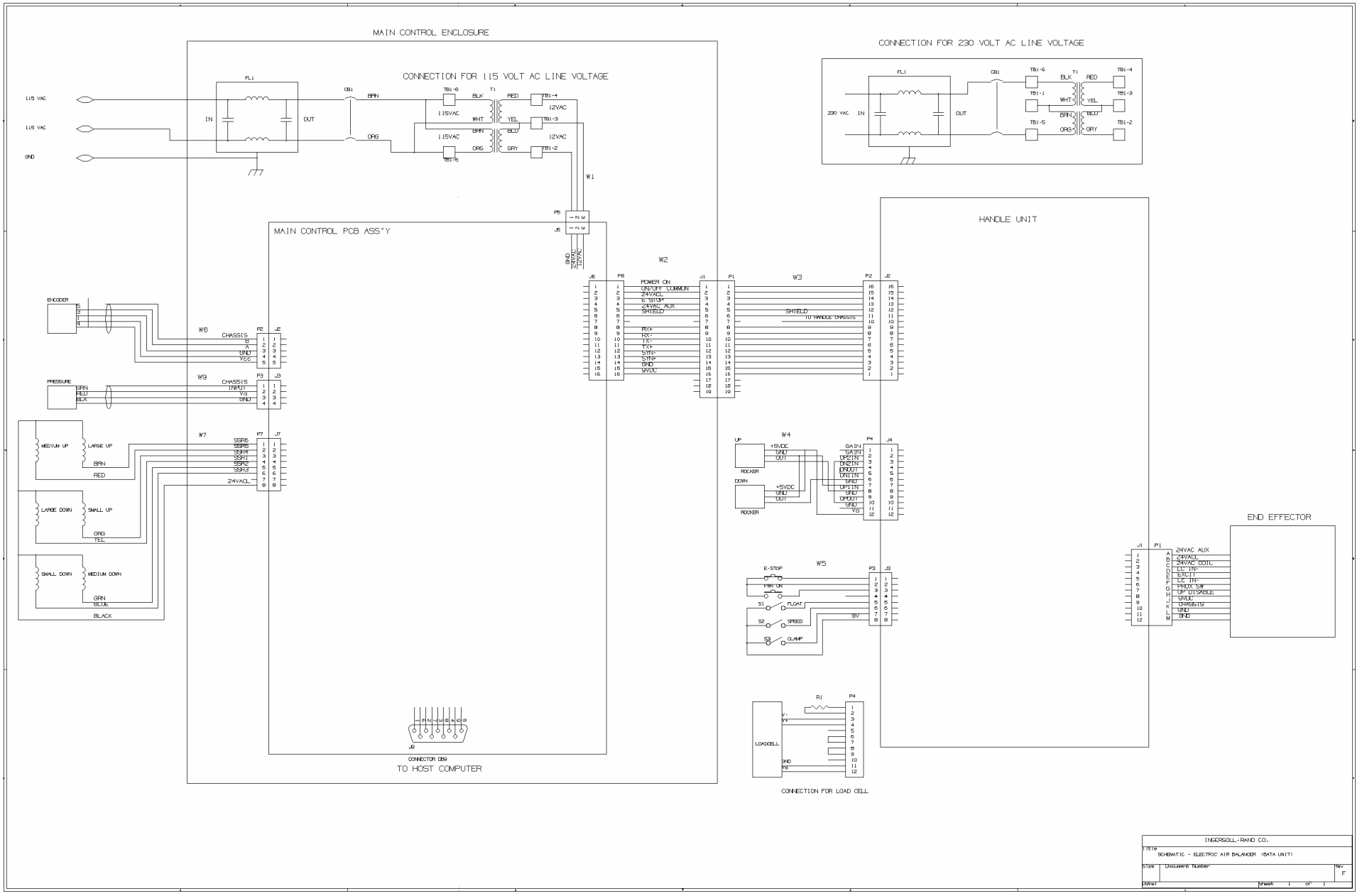


If you think you have a suspect part, prove it before you replace it!!

Intelift Troubleshooting Table

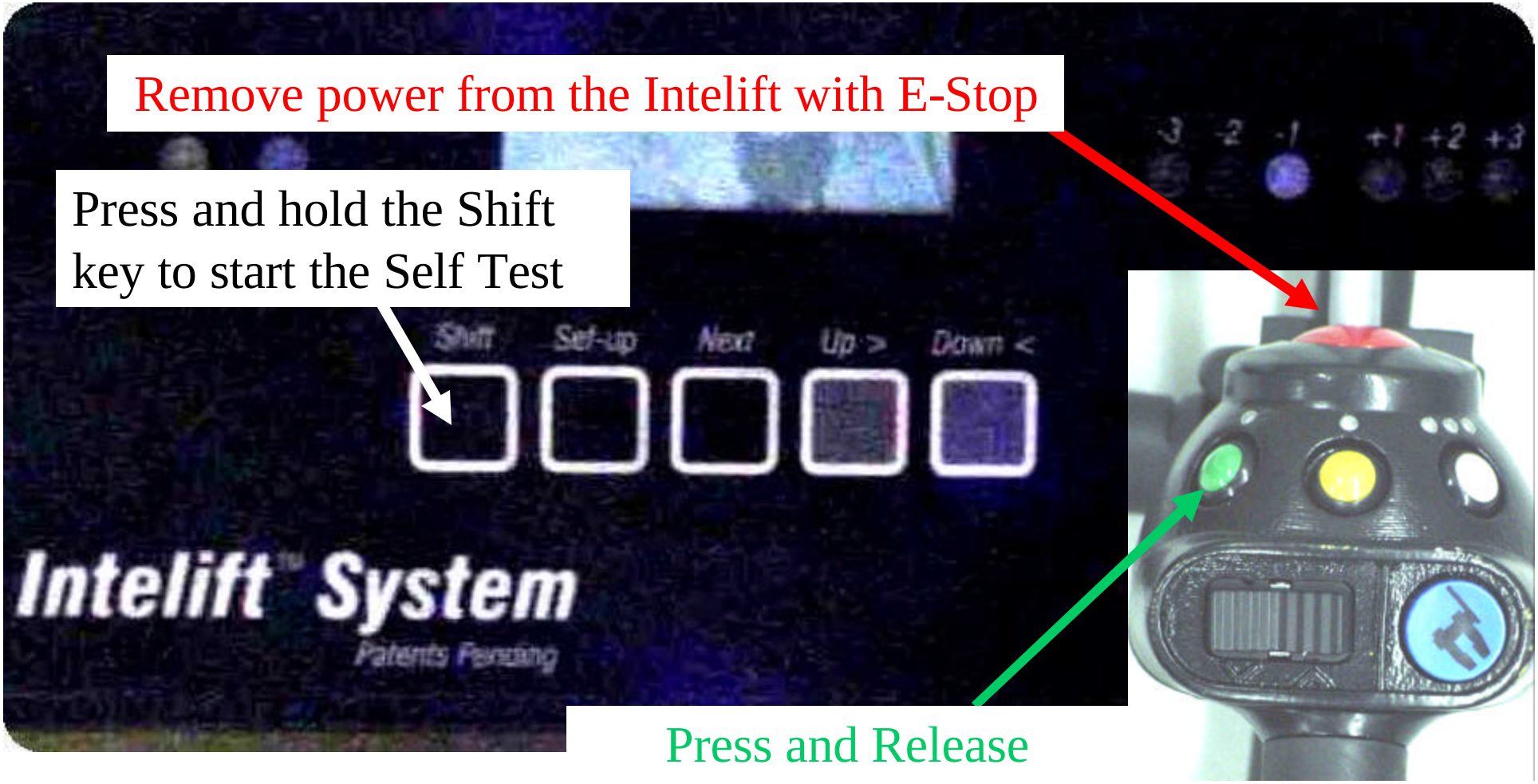
Symptom	Cause	Remedy
Power "ON" does not work.	No power to system.	Check external electrical system connections, cords and 4 amp fuse in control panel.
		Check electronic control connections and cords.
	Main cable not connected.	Check electronic control panel connections and cords.
	"ON" - "OFF" circuit breaker switch in "OFF" position.	Check "ON" - "OFF" circuit breaker switch is in "ON" position.
"Lift" and/or "Lower" pendant control does not function properly.	Pendant control cable connections.	Check pendant cable control connections at pendant and electronic control panel. Check 0.5 amp fuse in control panel.
	Control Handle "TARE" needs resetting.	Reset control handle "TARE". Refer to 'Balancer Control Adjustments' on page 12.
	Pressed "UP/DOWN" rocker switch on control handle during start-up 3 second self test.	Restart the *Intelift*™ Electronic Control system without pushing "UP/DOWN" rocker switch during 3 second start-up self test.
"Dump" Mode does not work.	Pendant or system malfunction.	Depress *Intelift*™ button and ensure red light on control panel is flashing.
	Loose or disconnected electrical connection.	Check connection at encoder sensor.
		Check encoder connection at control panel.
"Float" mode does not work.	Pendant or system malfunction.	Depress *Intelift*™ button and ensure red light on control panel is flashing.
	Loose or disconnected electrical connection.	Check pressure sensor connection at manifold.
		Check pressure sensor connection at control board.
"Clamp/Unclamp" mode does not work.	Loose or disconnected electrical connection.	Check wiring to the servo unit on end effector.
		Check pendant connection at handle and main board.
	Set Interlock "TARE"	
No response from balancer.	Emergency Stop engaged.	Depress "ON" button on control.
	"ON" - "OFF" switch in "OFF" position.	Shift switch to "ON" position.
Intermittent operation.	Poor grounding (earth).	Correctly ground (earth) power supply. Check wiring for broken wires.
	Foreign material or moisture on electrical connectors.	Dry or remove foreign material which may have accumulated on electrical parts.
	Open/Short in power supply system.	Check all switches, connections and circuit breakers in power supply line for damaged insulation.
'Fault' light stays on.	Improper operation.	Do not press any of the control handle buttons during lifting or lowering operation.
	Control handle is not TARED or "TARE" needs resetting.	Reset Control Handle "TARE". Refer to 'Balancer Control Adjustments' on page 12.

Intelift Schematic



Intelift Troubleshooting

Intelift QA Self Test



Intelift Troubleshooting

What running "QA" will do for you

Help troubleshoot sensor or control handle communication problems

Encoder	Rocker switch
Display Button	Pressure Sensor

Intelift Preventive Maintenance

Preventive Maintenance Inspection Schedule

Component	Inspection	Criteria for Operation	Daily (1st operation of shift)	Frequent (Less than 6 months/semi annual)	Periodic (More than 6 months/annual)
Manifold End Cover	Cracks, wear, damage	Cover protects electrical connections from moisture and dirt. End cover must be secure and undamaged.	X		
Control Panel	Moisture	Control panel must be dry inside and out.		X	
	Dirt, dust, airborne particles	In environments where small airborne particles, dust or dirt are present, care must be taken to ensure these materials do not enter control panel.		X	
	LCD window indication	LCD window indication must accurately reflect the operating mode, or setup condition of the control panel.	X		
Control Handle	Damaged housing, loose buttons	Control handle must not be damaged, or buttons worn and loose in housing.	X		
	Strain relief	Strain relief must support weight of pendant handle. Wiring must not be allowed to support weight of pendant.	X		
	Control Handle operation	Control handle functions must provide smooth and accurate operation.	X		
Electrical Wiring (supply and harnesses)	Insulation	Wire insulation must not have breaks, be brittle or support any component. Insulation must be pliable to the touch, dry and installed with enough slack in the line to prevent 'pulling' on the wire to make connections. Wire installaton should not contact any moving or rotating component during operation.		X	

Balancer Preventive Maintenance

PREVENTIVE MAINTENANCE SCHEDULE

Component	Inspection	Criteria for Operation	Daily (1st Operation of Shift)	Frequent (Less than 6 months/ semiannual)	Periodic (More than 6 months/annual)
Chain	Lubrication	Wet to the touch along entire length of chain	X	X	X
	Wear: Reference ANSI Standard for Welded Link Chain Maintenance Sec. 16-2.5 – Page 36	Links not worn into each other at contact points. Refer to Dwg. MHP0102 on page 36.	X	X	X
Wire Rope	Kinks	No visible kinks on entire length	X	X	X
	Fraying	No visible fraying on entire length	X	X	X
	Bird caging	No visible separations on entire length	X	X	X
Clamps	Tightness	Clamp will not slide on wire rope, clamps or loose	X	X Torque check clamps at 7.5 ft. lbs (1.04 kg/m)	X Torque check clamps at 7.5 ft. lbs (1.04 kg/m)
	Cracks	No visible cracks	X	X	X
Load hook	Cracks	No visible cracks	X		X
	Swivel	Smooth operation and free rotation			
	Hook Latch	Positive locking of latch	X		X
Reeve Block	Cracks	No visible cracks	X		X
	Swivel	Smooth operation and free rotation			
	Hook Latch	Positive locking of latch	X		X
	Hardware	Center pulley bolt for full engagement	X	X	X
	Pulley	Smooth operation when in motion	X		X
Suspension Kit	Hardware	No loose or missing hardware	X	X	X
	Trolley Body	Aluminum–no visible cracks. Steel–no visible broken welds	X		X
	Trolley Wheels	Smooth operation with no binding	X		X
	Hook Mount (Optional)	Positive locking of latch	X		X
	Safety Cable (Optional)	No loose clamps	X	X Torque check clamps at 7.5 ft. lbs (1.04 kg/m)	X Torque check clamps at 7.5 ft. lbs (1.04 kg/m)
Balancer	Smooth operation	No binding or resistance in motion	X	X	X
	Lubrication	Piston and ball screw for grease			X
	Wear	Internal parts for excessive wear. Refer to Balancer Cleaning and Inspection on page 39			X
Controls	Fittings	No visible cracks, leaks or looseness	X		X
	Tubing	No visible bulges, cracks, kinks	X		X
	Handles	No visible cracks, leaks, looseness, or sticking of buttons	X		X
	Manifold/Regulator	No visible cracks, leaks or looseness of hardware	X		X

Intelift Model Configuration