ZGS-12000-7 Fixed Hoist Test Facility (FHTF) Used in conjunction with the ZGS-10000-5 Mobile Rescue Hoist Ground Support Equipment (RHGSE)

Operation and Maintenance Manual

Table of Contents

Fixed Hoist Test Facility (FHTF) 3
System Floor Plan: 5
System Interconnect Diagram 6
Assembly of FHTF: 7
Load Cell Calibration 16
System Procedures: 20
Rescue Hoist FHTF Check List 21
Startup 21
Shut Down 22
Moment Diagram 23
Assembly Drawing and Major Parts List 24

Fixed Hoist Test Facility (FHTF)

Purpose: The FHTF when used in conjunction with the Mobile Rescue Hoist Ground Support Equipment (RHGSE) provides the capability to operate the electric BL-29900 rescue hoist off of the aircraft in order to perform intermediate level maintenance and troubleshooting.

Description of FHTF: The FHTF consists of an upright structure, including an upper weldment assembly, a hanging hoist mount, a chain hoist for raising and lowering the unit under test (UUT), a load weigh system, a set of interconnecting cables, a receptacle for three phase 400 hz power and a 28 volt power supply. The UUT control signals are provided by a customer supplied set of controllers and pendant.

Theory of Operation: The upright structure is equipped with a chain hoist to raise the UUT up to the top of the structure where it is attached to two load cells. The two load cells provide signals to a load cell summing box where the signals are summed and sent to a display. The load readout can be set to zero to tare the readout with no load applied to the rescue hoist hook.

The wire rope tensile load is provided by the RHGSE. The RHGSE provides the capability to extend the wire rope under approximately 300 lbs. maximum load, and provides the capability to retract the wire rope under approximately 600 lbs. maximum load.

The 28 volts required to control the UUT control system is provided by a power supply mounted in the junction box. The control pendant is mounted via its connector directly to the front of the crew control panel, and the connectors are attached according to figure 4.

A receptacle is provided to attach the connector from the 400 Hz power cart, and a circuit breaker is provided to switch the three phase 400 Hz power.

Electrical loads:
200 volts 3 phase 400 Hz, approximately 8 KVA protected by a 30 Amp breaker
220 volts single phase approximately 5 amps

UUT operating criteria: The UUT is rated for 600 lbs and 350 feet per minute.

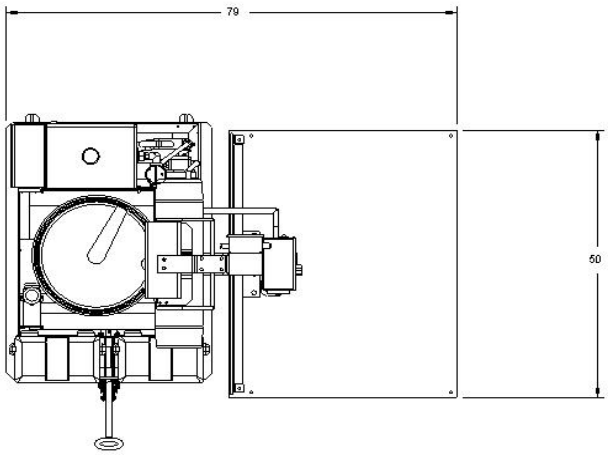
FHTF Limitations:
The FHTF is not intended to provide the capability to perform a complete acceptance test as per the OEMs requirements but to allow the maintenance personnel to perform checks of the system performance, set the hoist's limit switches, adjust the levelwind, and replace and condition the wire rope before the UUT is mounted onto the aircraft; thus minimizing aircraft down time and flight time required if those procedures were carried out on the aircraft.

System Pictures:

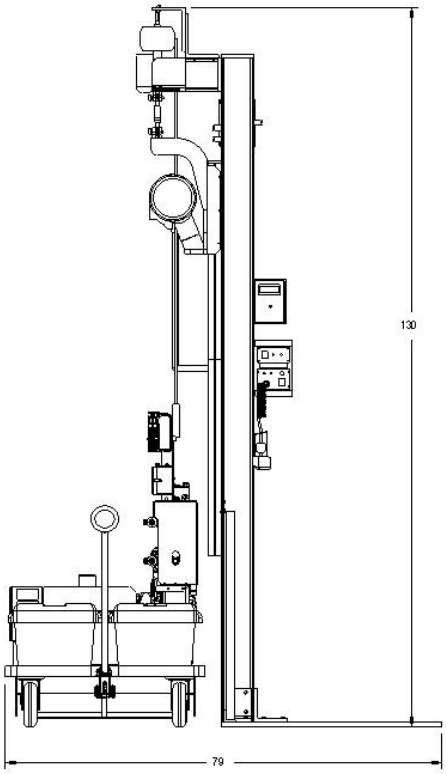
The Location Installation Requirements:

- Should be far from aircraft or equipment movement.
- Should be as close as possible to the AC power plug.
- When the system is being used it should be located away from any other activities in the hanger, in order to prevent any injuries which might occur to the personnel while they are focusing on the UUT and RHGSE.

System Floor Plan:

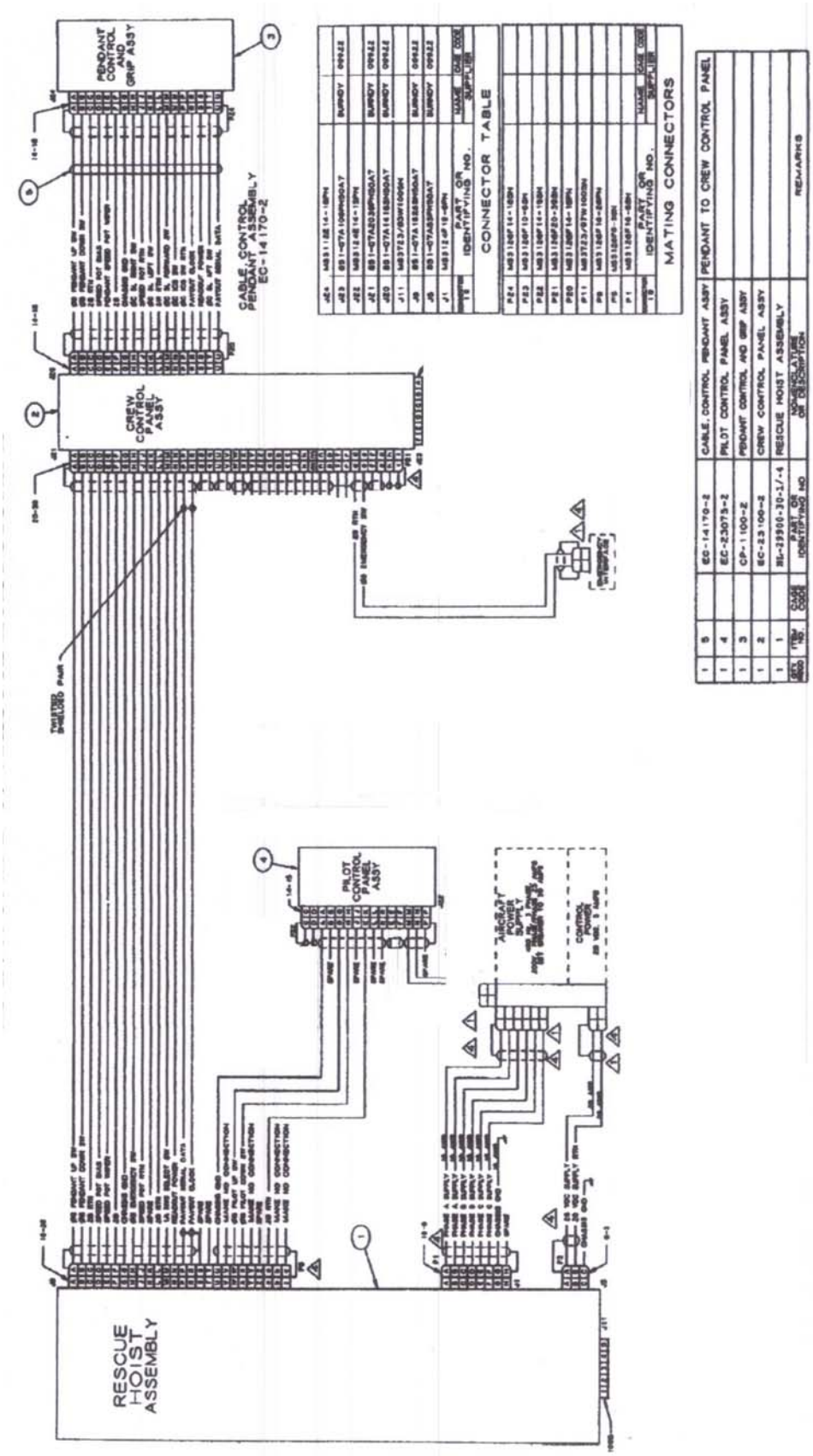


Top View
Dimensions in inches



Elevation View

System Interconnect Diagram



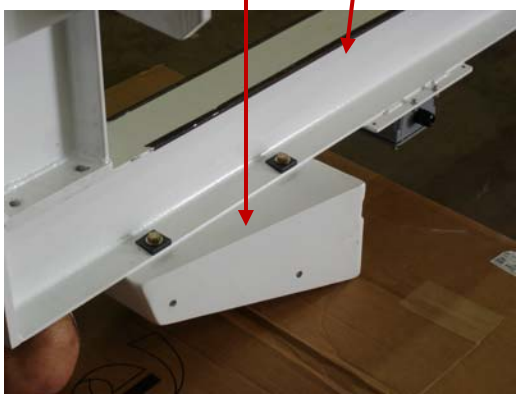
Assembly of FHTF:

- Unpack the crates and verify all the parts arrived in good condition.
- Use a forklift and lift the base weldment off the pallet and place it close to its final position.
- Attach the base attachment angles to the I Beam using the labels to align each bracket properly

Base Attachment Angles

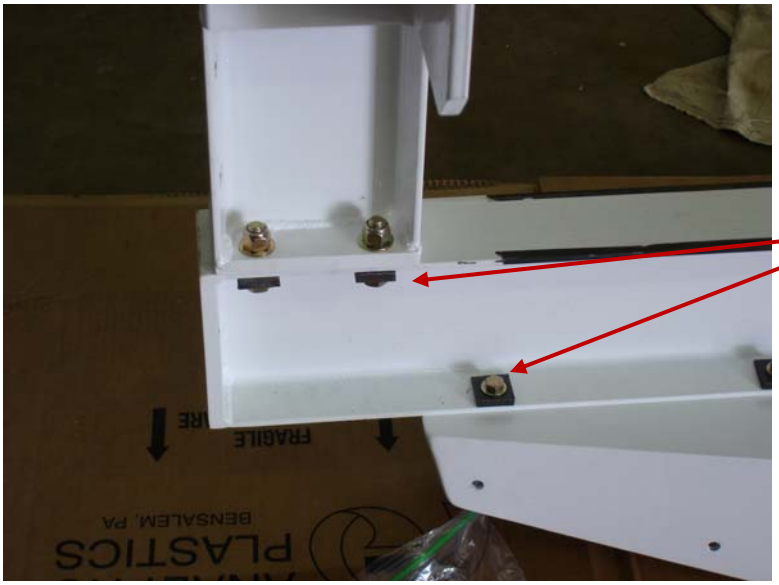
I Beam

- Locate the upper brace mount and attach it to the I beam with its fasteners



- Attach the load cell summing box to the I beam.

o Flip the I beam over and attach the Hoist Hanging Weldment to it



o Use the beveled washers on the back surface of the beam flange as shown.

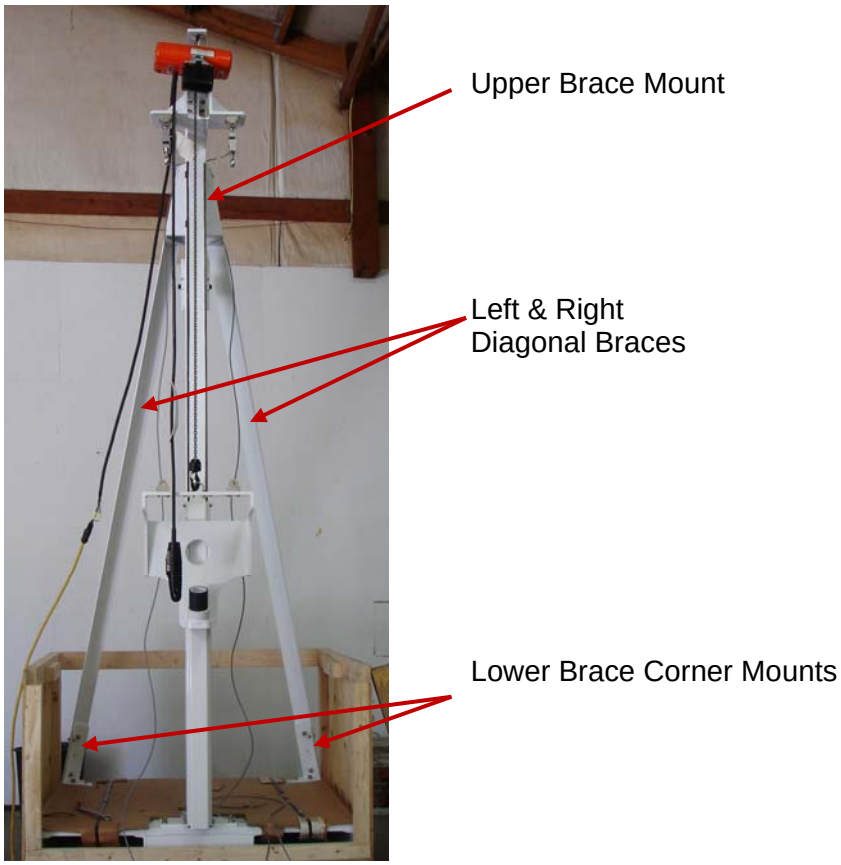
- With two people or a crane stand up the I beam upright

- Place the attaching brackets into position and attach all the screws.

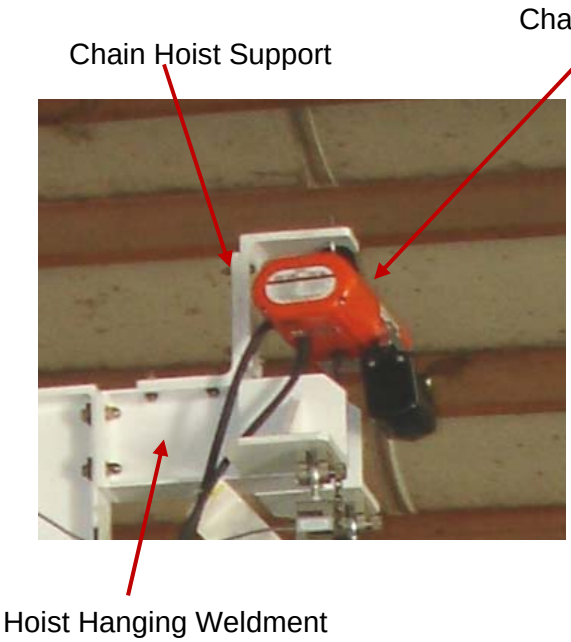
- Place the lower brace corner mount into position and loosely attach the brackets with one bolt in each corner.

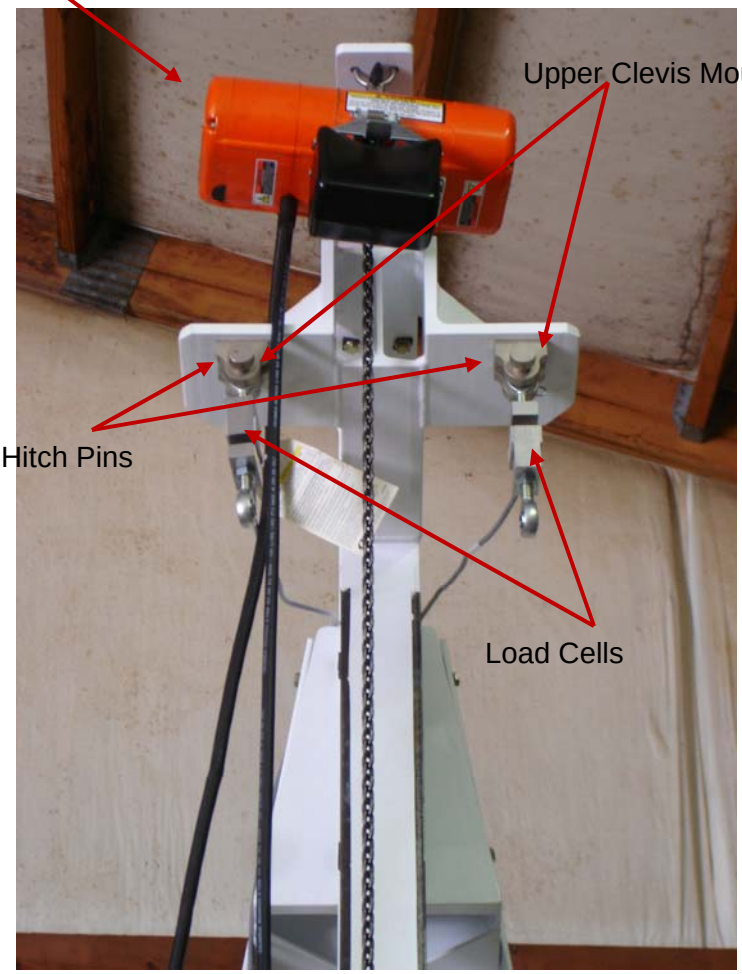
Identify the left and right diagonal braces and mount them between the lower and the upper braces loosely.

Once all the holes have been lined up and the bolts inserted then **tighten all the bolts securely.**



- Attach the chain hoist support to the top of the hoist hanging weldment.
- Then attach the chain hoist with the chain cover facing outwards.
- Tighten the nuts on the u-bolts securely to prevent the chain hoist from escaping the u-bolt.



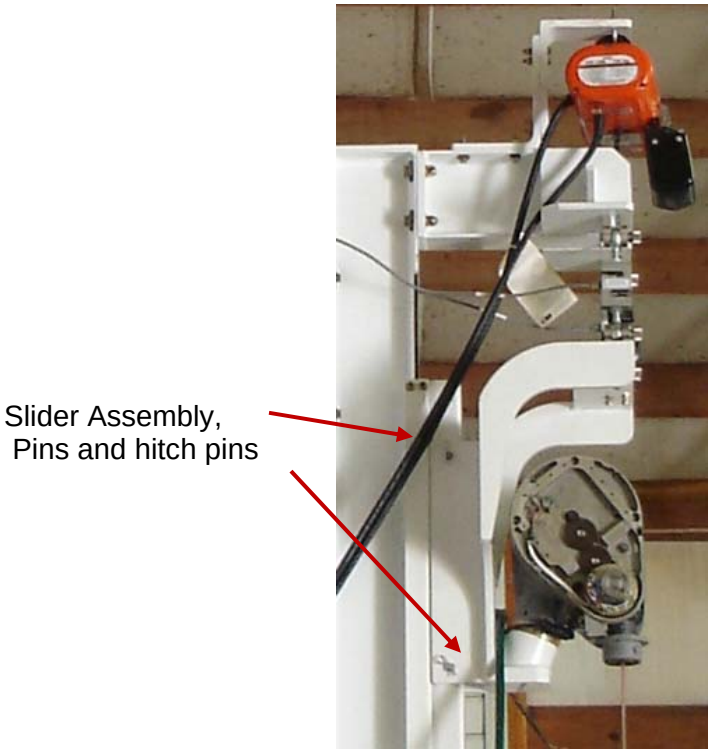


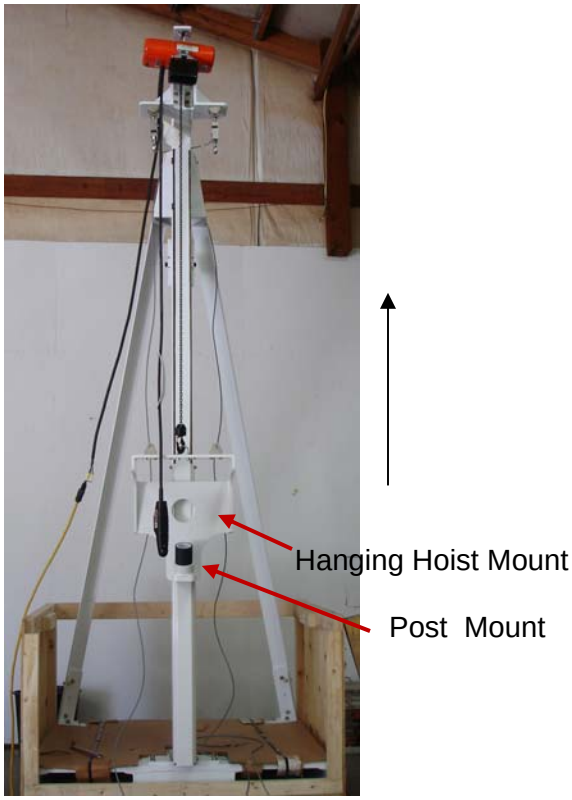
- Install the S shaped load cells to the upper clevis mounts.
- Attach the hitch pins to prevent the clevis pins from escaping the clevis mounts.

- Attach an extension cord to the chain hoist and lower the hook to allow the hanging hoist mount to be attached.

- Using the chain hoist control, lift the hanging hoist mount up so it can be attached to the slider assembly with its two pins.

- Insert the hitch pin retainer pins into the slider assembly pins.





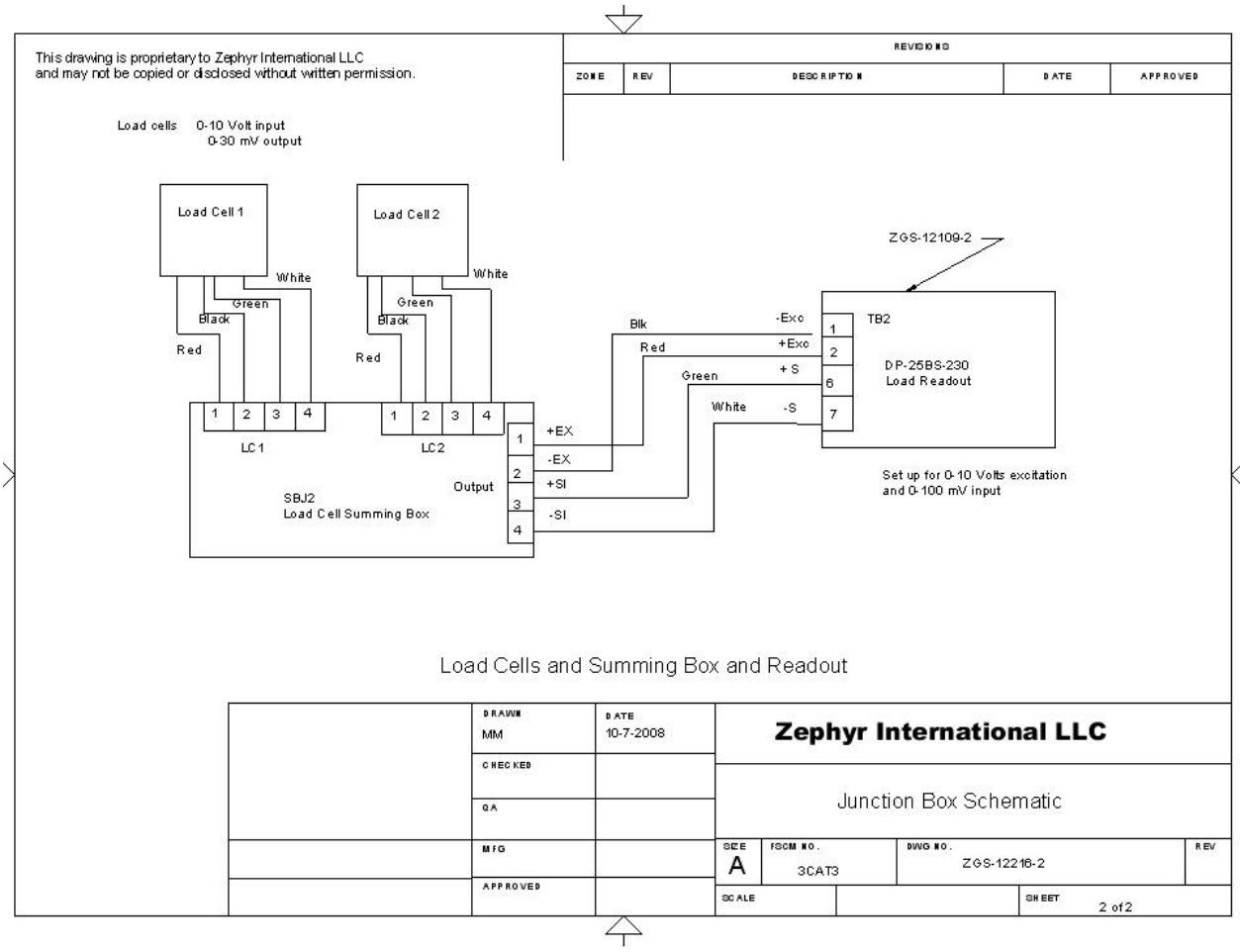
- Using the chain hoist raise the hanging hoist mount and slider upwards.

- Engage the lower tie rod ends of the load cell assemblies to the lower clevis mounts of the hanging hoist mount with two clevis pins and hitch pins.

- Mount the controls frame and the 3 phase input power receptacle as shown.

- Mount the Load Cell Readout and 28 VDC power supply box as shown.

- Open up the summing box and attach the load cells and the summing box output to the load meter readout as per ZGS-12216-2.



Locate the FHTF in its final position and bolt the base to the floor if desired with the floor attachment angles provided.

ZGS-12216-1

Load Cell Calibration

Install a hoist and make all electrical and mechanical attachments.

Configure the load cell readout according to section 4 of the DP25B-S User manual.

Input type is 100 mV
Set the decimal point to the default 0000
Dip switch setting is
12345678
COCOOCOO

Set Rd.CF R.2=1

If a 600 lbs load is available Scale the meter according to section 4.3.1.

With the UUT mounted on the hanging hoist mount with no load on it and with the mount attached to the load cells, store the IN 1 value as the unscaled display reading shown and set the RD 1 value to zero.

Then lower the UUT hook and attach the load and raise the 600 lbs weight until the weight is off the ground.

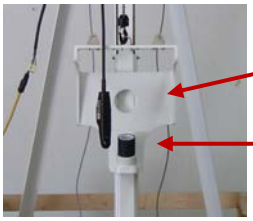
Store the IN 2 reading and input the Rd 2 value as 600 lbs.

Note: This procedure can be performed with a lower or a higher load, and the Rd 2 value is then adjusted to the exact weight used. Using a value of 600 lbs insures maximum accuracy, but is not essential.

Installing the UUT

- To install the UUT the hanging hoist mount is lowered by raising the hoist mount with the chain hoist hand control just enough to allow removing the pins from the lower load cell clevis.

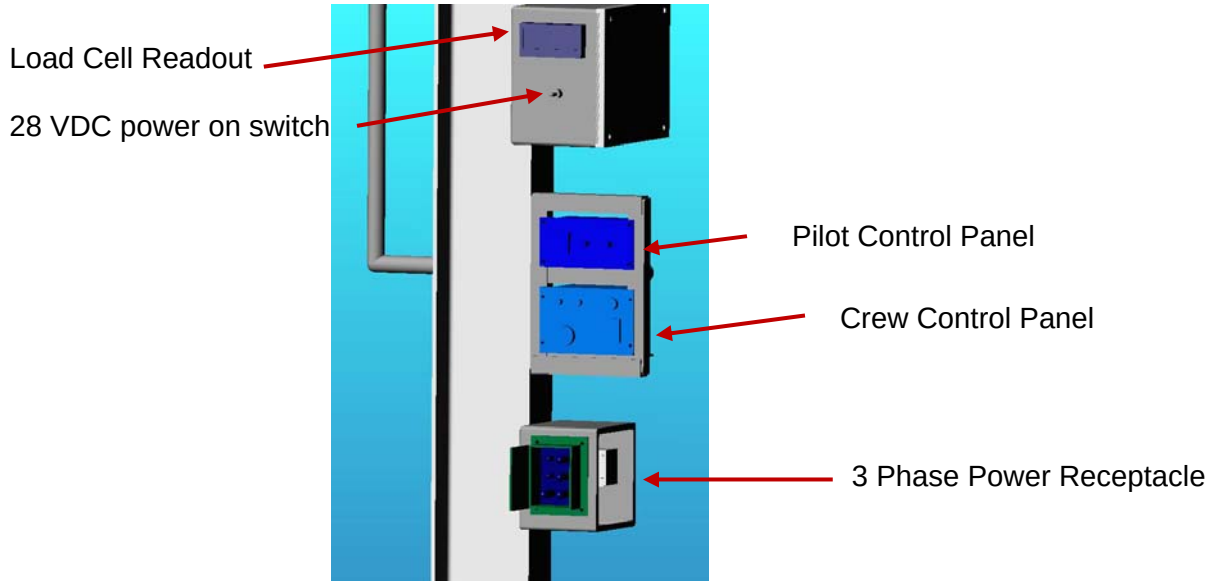
- Remove the pins and then lower the hanging mount to the lower position as shown.



- Install the UUT onto the post mount and install two ¼ inch pins.

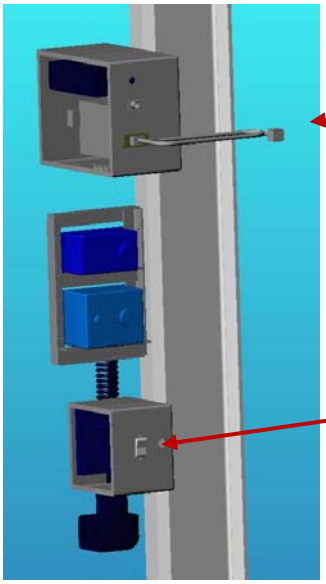
- Using the hand control raise the hanging hoist mount up to reattach the two clevis pins, then lower the chain hoist to apply all the weight to the load cells.

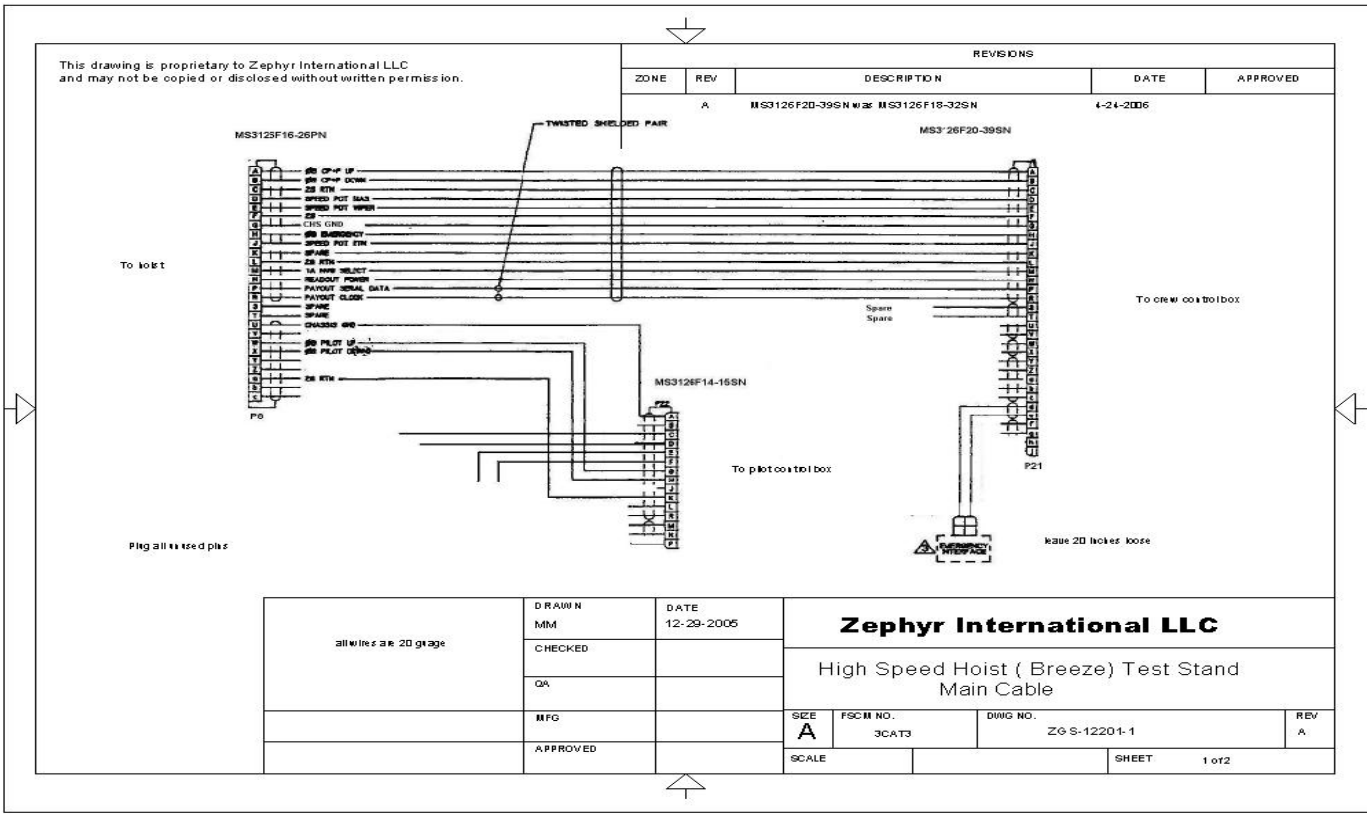
- Mount the electrical control boxes in the opening on the frame as shown.



Attach the plug from the Ground Power Cart to the receptacle provided.

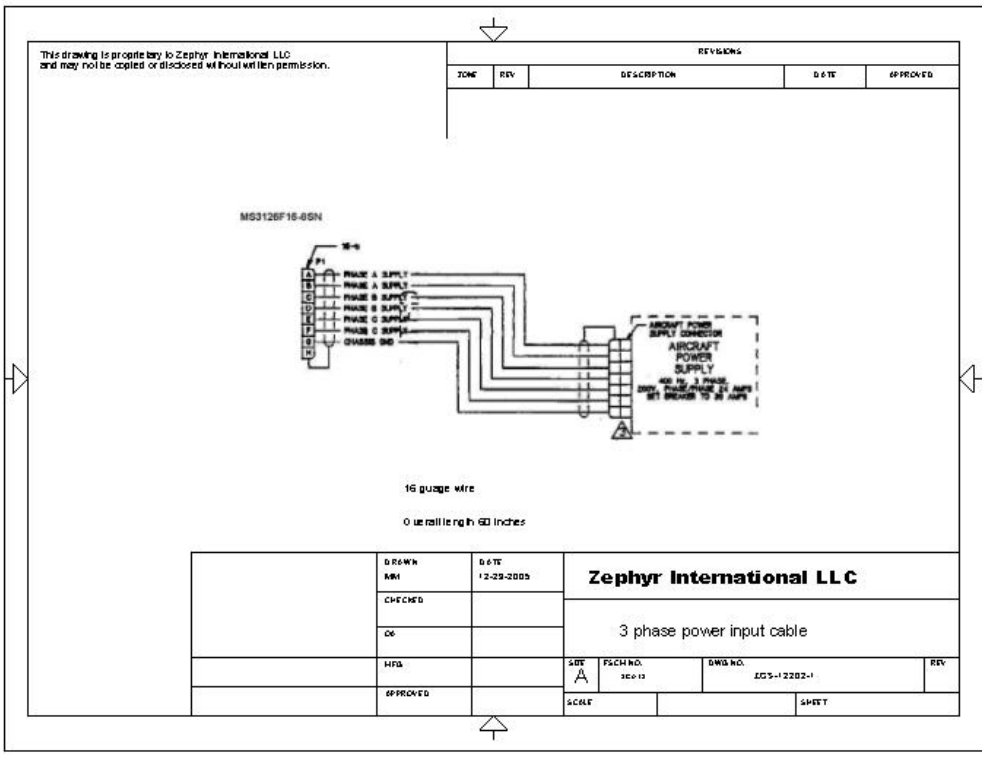
- Attach the 220 V AC power
- Attach the ZGS-12201-1, ZGS-12202-1 and the ZGS-12203-1 cable assemblies,



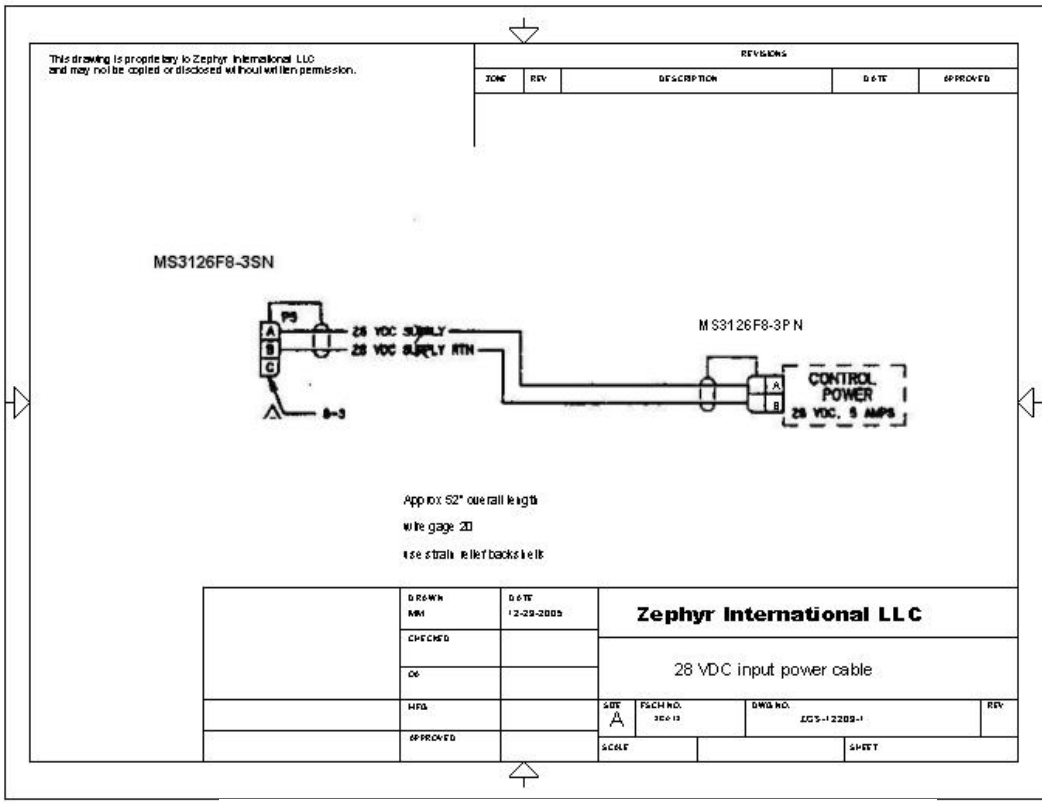


3CAT3

ZGS-12201-1 High Speed Hoist Test Stand Main Cable



ZGS-12202-1 3 Phase Power Input Cable



ZGS-12203-1 28 VDC Input Power Cable

System Procedures:

System Startup Procedure

Turn on the load indicator switch and allow the indicator to start up. Depending on the calibration method used the load indicated is either zero or is the combined weight of the UUT and the hanging hoist mount. To zero the reading press the Tare button on the load indicator panel and the load indicated should go to zero.

System Operating Procedure

The system is design to be operated in conjunction with the Mobile RHGSE as shown on the cover of the manual. ZOM-10000-5 describes the operation and maintenance of the Mobile RHGSE in detail.

A checklist is provided to facilitate system operation, see page 21 and 22.

Test Procedures:

Test procedures are as described in the OEM's operation and maintenance manual.

Detailed test procedures are not included herein as they are out of the scope of this instruction manual.

System Maintenance

The connections to the UUT should be capped and stored in such a position that dirt is not entrained into the system.

Attachments:

- Electrical Schematic ZGS-12216-2

- Component Manuals
  - Load Cell Final Calibration Sheets
  - Strain Gage Panel Meter User's Guide

Rescue Hoist FHTF Check List

Startup

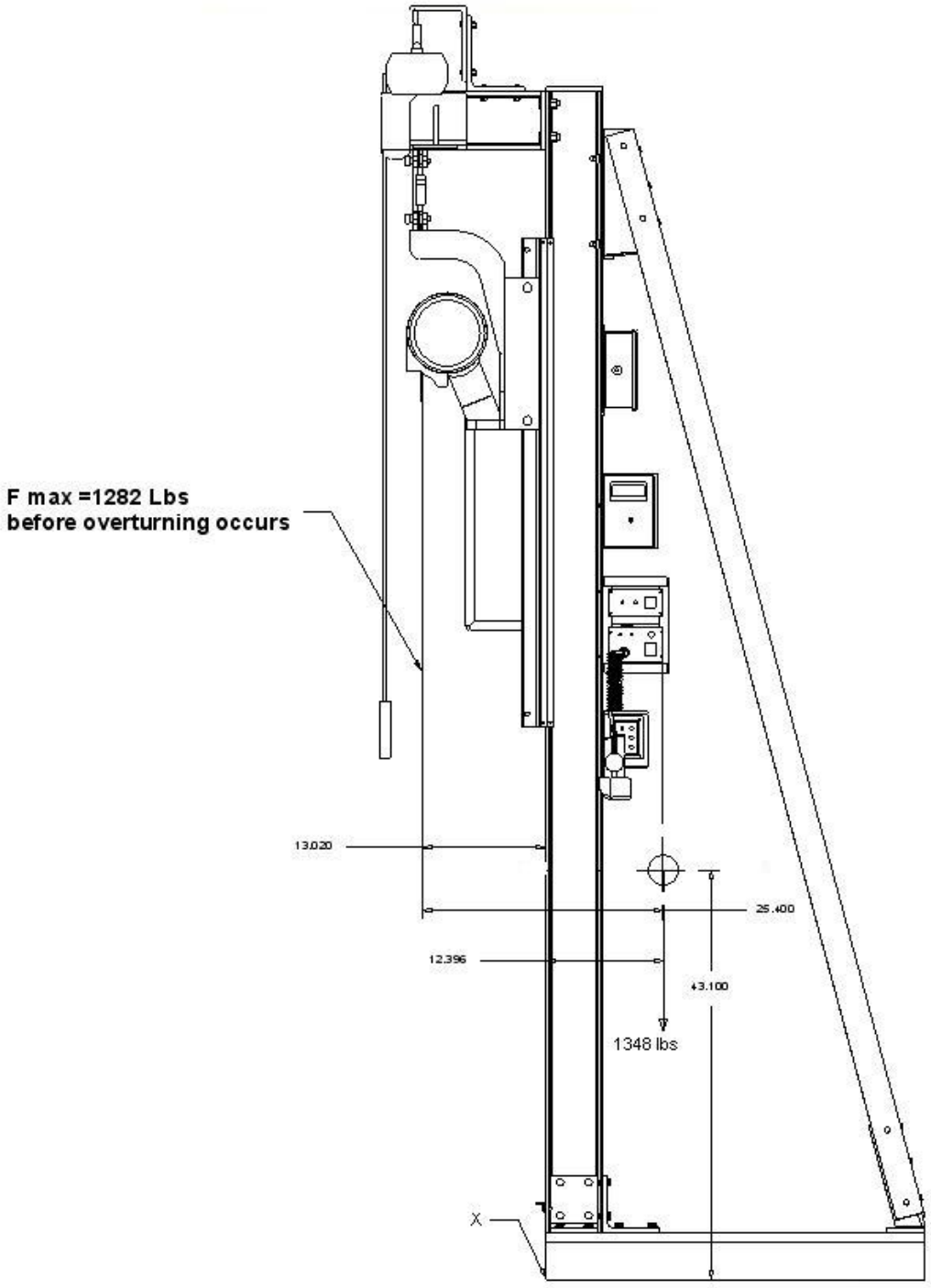
1) Lower hanging hoist mount
2) Install hoist
    a. Install electrical connectors and tighten
    b. Insert (2) ¼ inch bolts or pins through one side
3) Raise hanging hoist mount
    a. Install two load bolts
    b. Lower chain hoist to apply load to load cells
4) Connect Control Boxes
5) Connect Pendant
6) Move mobile GSE into position beneath hoist
7) Push Circuit Breaker Switch - on
8) Turn Indicator switch – on
    a. Zero the load reading if necessary
9) Lower wire rope and hook with pendant control
10) Attach wire rope and hook to mobile GSE
11) Operate mobile GSE per instruction

Rescue Hoist FHTF Check List

Shut Down

1) Remove wire rope and hook from mobile GSE
2) Raise and stow hook against hoist bell mouth
3) Turn Indicator Switch - off
4) Push Circuit Breaker Switch – off
5) Remove mobile GSE from under the rescue hoist
6) Detach connectors from hoist
7) Detach connectors from control box- if desired
8) Detach connector for pendant – if desired
9) Lower hanging hoist mount
    a. Raise chain hoist to unload load cell pins
    b. Remove load cell pins
    c. Lower hanging hoist assembly
10) Remove electrical cable connectors from hoist
11) Remove hoist

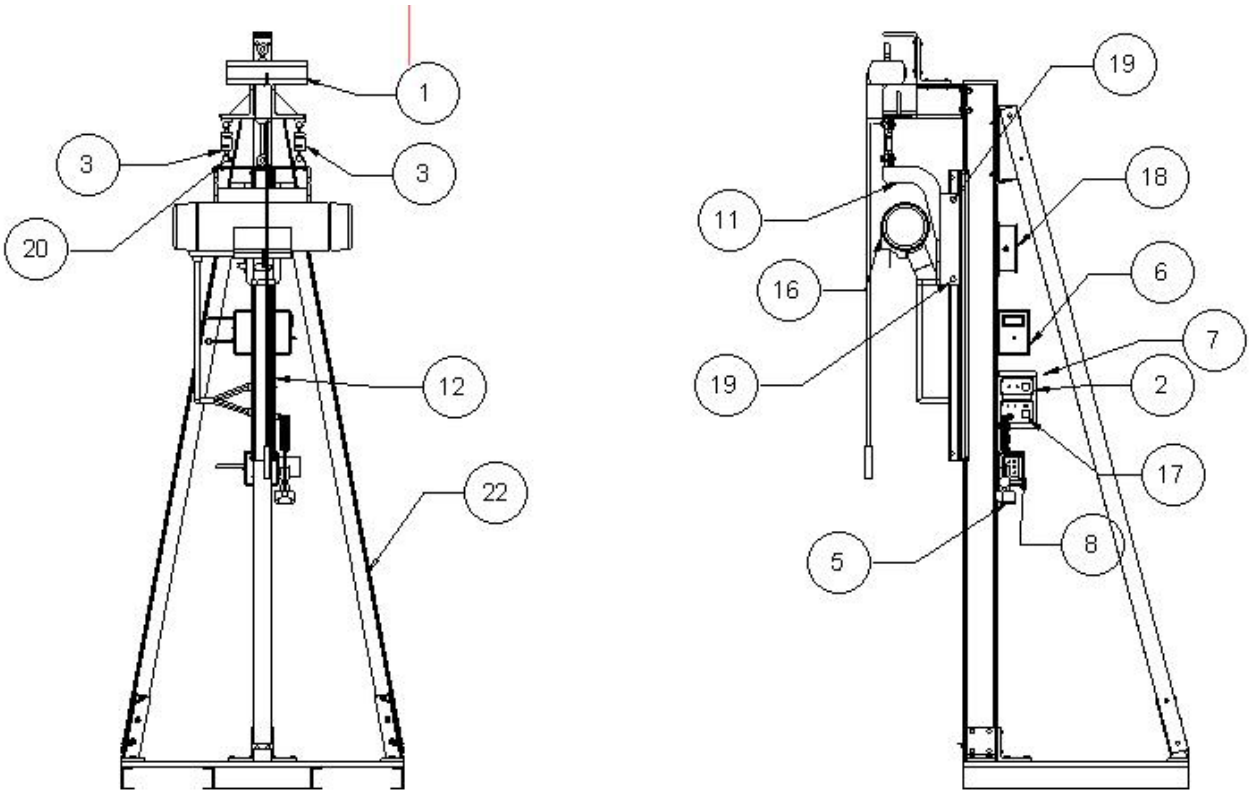
Moment Diagram



Assembly Drawing and Major Parts List

ZGS-12000-7

Illustrated Parts List



Item Number	Quantity	Part Number	Part Name	Revision	Comment
1	1	ZGS-12501-1	Shop Star Hoist		
2	1	Reference	Pilot Control Panel		
3	2	ZGS-12126-1	S Beam Load Cell Assembly		
4	1	ZGS-12203-1	28 VDC Cable		
5	1	Reference	Pendant		
6	1	ZGS-12208-2	Power Supply box BL-29900 230 \		
7	1	ZGS-12204-1	Controls Mounting Frame		
8	1	ZGS-12210-1	Input Power Box		
9	4	ZGS-12105-1	Clevis Half		
10	1	ZGS-12202-1	3 phase power cable		
11	1	ZGS-12312-1	Hanging Mount Assembly Redstor		
12	1	ZGS-12337-1	Slider Assembly		
13	1	ZGS-12201-1	Main Cable		
14	4	ZGS-12213-1	Cam Follower		
15	4	ZGS-12213-2	Cam Follower adjustable		
16	1	BL-29900- Ref	BL29900 Model		
17	1	Reference	Crew Control Panel		
18	1	ZGS-12124-1	Load Cell Summing Box		
19	2	ZGS-12349-1	Pin Hoist Mount		
20	4	ZGS-12139-1	Load Cell Clevis Pin		
21	1	ZGS-12443-1	Chain Container		
22	1	ZGS-12414-1	DLTF Upright Assembly		