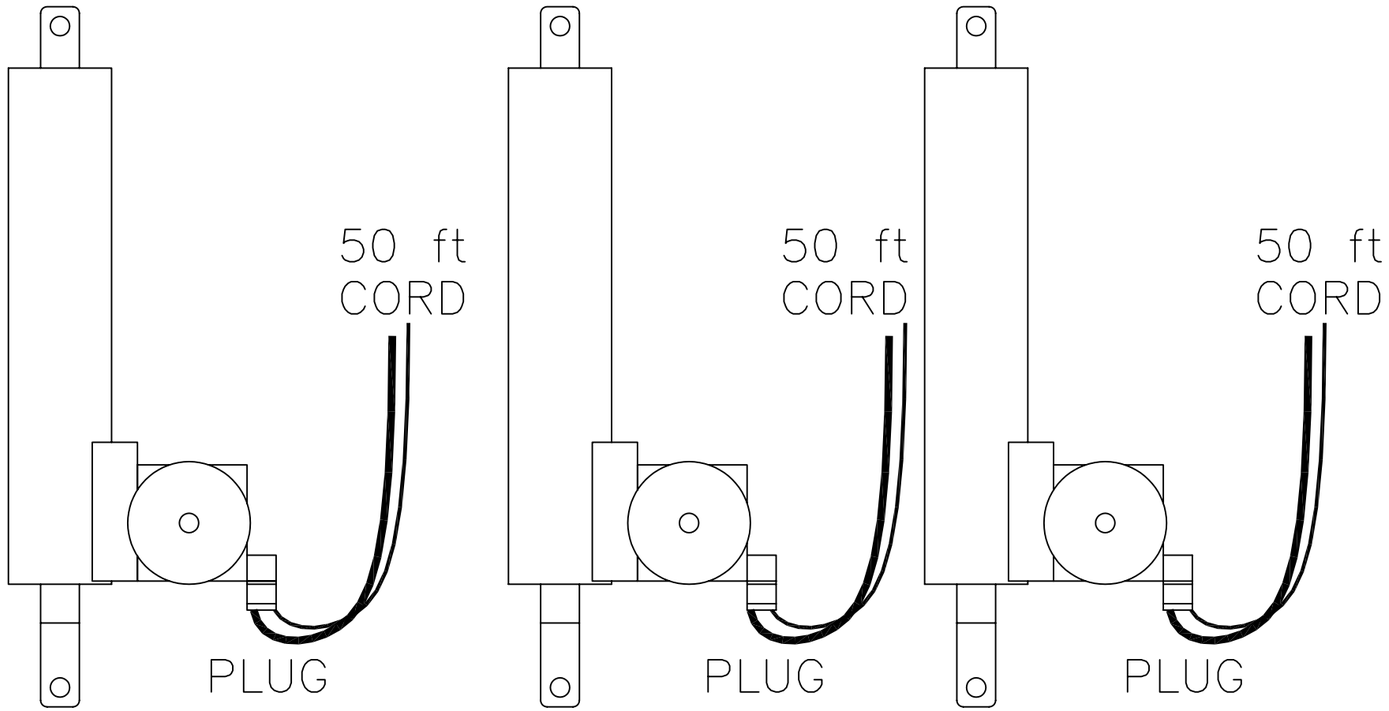
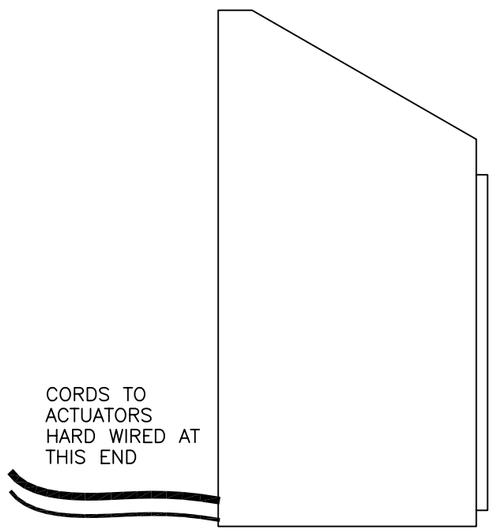
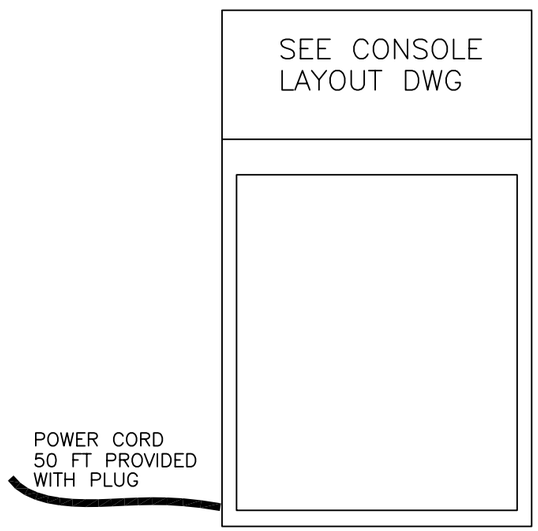






REVISION		
NO.	DATE	DESCRIPTION

PROJECT

PPPL 3 AXES ACTUATOR

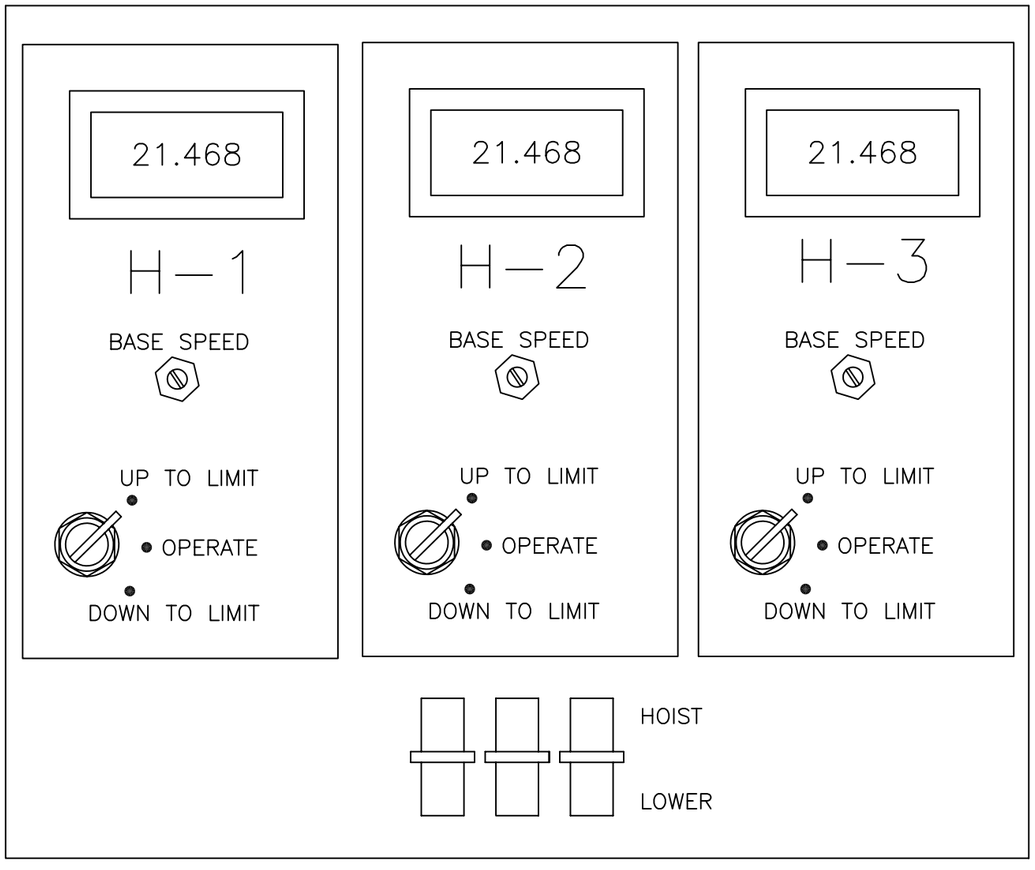
SCALE: NTS | APPROVED BY: | DRAWN BY: NM

DATE: | CHECKED BY: GM

GENERAL LAYOUT

PERMADUR INDUSTRIES
CONTROL DIVISION
186 RT. 206 SOUTH
P.O. BOX 1032
SOMERVILLE, NJ 08876

DRAWING NO.: PPPL-CHS153



REVISION		
NO.	DATE	DESCRIPTION

PROJECT

PPPL 3 AXES ACTUATOR

SCALE: NTS	APPROVED BY:	DRAWN BY: NM
DATE:		CHECKED BY: GM

CONSOLE LAYOUT

PERMADUR INDUSTRIES
CONTROL DIVISION
186 RT. 206 SOUTH
P.O. BOX 1032
SOMERVILLE, NJ 08876

DRAWING NO.: PPPL-CHS153

SISSCO / PERMADUR

CONTROL SYSTEMS DIVISION
186 ROUTE 206 SOUTH, HILLSBOROUGH, NJ. 08844
908 359 9767 Fax – 908 359 9773

Attn: Mike Viola
Princeton Plasma Physics Lab
James Forrestal Campus
Princeton, N.J. 08543

QUOTATION # 00806-A

PERMADUR MODEL CHS-15-3-WD
3 ACTUATOR COORDINATED LIFTING SYSTEM
WITH DIGITAL READ OUT.

This quotation is for a ready to hang electric 3 axes hoist/lower system. The system consists of 3 gear reduced, double clevis, keyed, screw type actuators. By utilizing a keyed design there is no radial torque imparted to the load or hanger. Each actuator is self-contained with it's own drive motor, upper limit switch, lower limit switch and feedback encoder.

All movement and monitoring of the system is done at the control console. The lower cabinet of the control console also houses the system electronics. The console has independent digital read outs that display the position of each actuator relative to the retracted limit. The position tracking and read outs are backed up by an uninterruptible power supply. In the event that main power is temporarily lost during a lift the position read outs will still be accurate when power is restored.

The motor control for each actuator is a 1.5 hp Variable Frequency type. The drives are mounted in the base of the console. An adjustable base speed is provided on the console face for each actuator. Acceleration and deceleration rates can be changed at the drives and initially tuned to best suit the load and application.

There is a keyed function select switch for each hoist. Position 1 will cause the hoist to move down to it's lower limit (extended position), position 2 places the hoist in "operate" mode for normal hoisting and lowering and position 3 causes the hoist to move up to it upper limit (retracted position).

Hoisting and lowering of the lifts is commanded via 3 paddle switches at the lower center of the console. The handle lengths and distance between the paddles allows a single operator to simultaneously move any combination of the 3 hoists up or down.

Specifications:

- Actuators – Manufactured to specs, by Duff Norton
  - Double Clevis
  - Keyed
  - 100:1 ratio 4.3 cd reducer
  - 1.5 hp drive motor
  - 48,000 lb capacity at 1.1 inches per minute
  - 30” travel
- Plug disconnects at the actuators for the motor, limit switches and encoder.
- (3) 50ft sets of motor and encoder wires provided. Hardwired to the control console with plug at the other end to match actuators.
- 40” tall Nema 4 slope front console for comfortable sit down operation during long sequences.
- Crane/Hoist rated variable frequency drives with full protection features.
- System will be available for demonstration at Sissco/Permadur prior to shipping.
- Power requirements are 3 phase, 192-240 vac, 20 amp. System is supplied with a Nema 15L-20 plug.

Price $ 38,469.50

Lead time- 10 weeks from receipt of order.

Prepared by:

Neil Meador
Manager, Automation and Controls
Permadur, Sissco
1/8/06