PART FLIPPER

OPERATOR CONTROLS

ELECTRICAL ENCLOSURE

HYDRAULIC UNIT
TPA – 25 ELECTRIC & HYDRAULIC MANIPULATOR

ELECTRICAL ENCLOSURE

HYDRAULIC UNIT “ON BACK”

OPERATOR CONTROLS
HIGH AND LOW VOLTAGE ELECTRICAL ENCLOSURES

HIGH VOLTAGE ENCLOSURE
460 VAC

- ELECTRICAL DISCONNET
- 460 VAC / 110 VAC TRANSFORMER
- HYDRAULIC MOTOR CONTACTOR
- 460 VAC / 24 VDC POWER SUPPLY

LOW VOLTAGE ENCLOSURE
24 VDC

- CIRCUIT BREAKERS
- RELAYS
- PLC
- TERMINAL STRIP
HYDRAULIC POWER UNIT (HPU)

- HYDRAULIC MOTOR
- GEAR PUMP INSIDE RESERVOIR
- HYDRAULIC RESERVOIR
- VALVE STACK

MULTIPLE FUNCTION HPU
HYDRAULIC DESIGN

• WHAT IS THE FUNCTION OF THE MANIPULATOR?

• HOW MANY HYDRAULIC FUNCTIONS ARE REQUIRED?

• HOW MANY FUNCTIONS ARE SIMULTANEOUS?

• WHAT IS THE MAXIMUM LIFT REQUIREMENT?

• WHAT IS THE DUTY CYCLE OF THE MANIPULATOR (THE NUMBER OF CYCLES PER HOUR)?

• WHAT FLOW RATE MUST THE HPU BE DESIGNED FOR?

• WHAT MAXIMUM PRESSURE MUST THE HPU SUPPLY?

• WHAT HORSEPOWER MOTOR IS REQUIRED TO PROVIDE THE MAXIMUM PRESSURE TO LIFT THE HEAVIEST PART AT THE REQUIRED CYLINDER SPEED?

\[ Q = v_C A_C \]
\[ p = \frac{F_P}{A_C} \]
\[ H.P. = PQ \]
ELECTRICAL DESIGN

- WHAT ARE THE INPUT AND OUTPUT SIGNALS TO AND FROM THE PLC?

- WHAT TYPE OF PLC IS REQUIRED FOR THE I/O COUNT?

- WHAT IS THE FULL LOAD AMPS OF THE HPU?

- WHAT IS THE MAXIMUM CURRENT RATING OF THE ELECTRICAL ENCLOSURE?
ELECTRICAL SCHEMATIC

HYDRAULIC MOTOR
LADDER LOGIC

GRIP

RELEASE

PLC

CONTROL
LOGIC

GRIP SOLENOID

RELEASE SOLENOID

GRIP PB

RELEASE PB

GRIP SOLENOID

RELEASE SOLENOID

RELEASE PB

GRIP PB

RELEASE PB
Conclusion

THIS IS HOW I USE PHYSICS AND COMPUTATION IN INDUSTRY.

THANKS FOR YOUR ATTENTION.