INSTALLING, OPERATING, AND MAINTAINING

MODEL D1086/D280

5 AMP GENERATOR FIELD CONTROL

WITH 'S' SHAPE PATTERN GENERATOR

INSTRUCTION MANUAL # 910-1252-003

INSTALLING, OPERATING AND MAINTAINING

THE MODEL D1086/D280

5 AMP GENERATOR

FIELD CONTROL

WITH 'S' SHAPE PATTERN GENERATOR

REVISION: 2.1
OCTOBER 2003

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INTRODUCTION

Thank you for purchasing an ***IPC* Automation** elevator control.

At ***IPC*** we are committed to designing and manufacturing high quality controls that meet or exceed our customers needs. This manual provides the information you will need in order to properly install, operate and troubleshoot the **Model D1086 5 Amp Generator Field Control with 'S' Shape Pattern Generator**. Please read this manual completely before attempting to install or operate the **Model D1086/D280.**

Please feel free to call ***IPC* Automation** with any questions you may have **BEFORE** performing installation or start-up.

***IPC* Automation**
4615 West Prime Parkway
McHenry, IL 60050

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SAFETY

There are certain fundamental warnings, which must be kept in mind at all times. These include:

THE D1086/D280 SHOULD BE INSTALLED, ADJUSTED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL EQUIPMENT IN THE ELEVATOR SYSTEM. PERSONAL INJURY AND/OR EQUIPMENT DAMAGE MAY OCCUR IF INDIVIDUALS ARE NOT FAMILIAR WITH THE HAZARDS REZULTING FROM IMPROPER OPERATION.

THE USER IS RESPONSIBLE FOR CONFORMING WITH THE NATIONAL ELECTRICAL CODE WITH RESPECT TO MOTOR, CONTROLLER AND OPERATOR DEVICE INSTALLATION, WIRING AND START-UP. THE USER IS ALSO RESPONSIBLE FOR UNDERSTANDING AND APPLYING ALL OTHER APPLICABLE LOCAL CODES WHICH GOVERN SUCH PRACTICES AS WIRING PROTECTION, GROUNDING, DISCONNECTS AND OVERCURRENT PROTECTION.

WARRANTY

Standard conditions of sale for the company include a Statement of Warranty, which covers the control equipment. This Statement of Warranty covers all new equipment.

The D1086/D280 Generator Field Control with 'S' Shape Pattern Generator has been designed as a standard product to meet the general criteria for providing an 'S' shape reference signal to be used in conjunction with a solid state generator field control for controlling Motor Generators for Elevator use. IPC does not warrant that the control will meet all application requirements, codes and safety standards.

Q.C. TESTING

Each unit is carefully tested at the factory prior to shipment. The control must pass rigorous static and dynamic performance tests as well as a final inspection for quality of workmanship. A unit is allow to ship only after passing all aspects of this Q.A. testing and inspection process.

STORAGE

Should it become necessary to store the control for any length of time, please keep the following precautions in mind to ensure the proper operation of the control.

- ☞ Store the control in a clean, dry (non-corrosive) location that is protected from sudden temperature changes, high levels of moisture, shock and vibration.
- ☞ Ambient temperature should be maintained between 0 and 50 degrees Centigrade.
- ☞ The control should be covered to protect from dust and dirt contamination (utilize original shipment packaging if available).

SECTION TWO
GENERAL DESCRIPTION

INTRODUCTION

The Model D1086/D280 Generator Field Control, in its typical operating mode, varies the Generator field voltage in proportion to an input command signal. Adjustment potentiometers are provided for adjusting six contact-selectable speed setpoints (including high speed), two acceleration rates and three deceleration rates. Four potentiometers are also provided for the individual adjustment of the 'S' Shape Curve *knees.*

All potentiometers used for speed, acceleration, deceleration and knee adjustment are four-turn potentiometers.

CONTROL SPECIFICATIONS

Input Supply: Input Line Voltage – 208 to 230 Volts AC Single Phase 50/60Hz

Output: Zero (0) to 180 Volts DC at 5 Amps.

Dimensions:
Length: 10.00 inches
Width: 7.75 inches
Height: 5.00 inches

Speed Settings:

Speed Pot	Terminal	Adjustable % of Full Speed	Range of Input Reference Voltage
SP1	TB3-22	0 to 15%	0 to 1.5 VDC
SP2	TB3-23	0 to 25%	0 to 2.5 VDC
SP3	TB3-24	0 to 100%	0 to 10 VDC
SP4	TB3-25	0 to 100%	0 to 10 VDC
SP5	TB3-26	0 to 100%	0 to 10 VDC
HI	TB3-27	100% Fixed	10 VDC

Speed settings SP1 through SP5 can be adjusted without an UP or Down signal applied or a speed contact pulled in. Monitor the voltage between each speed terminal connection and common (TB1-3) to set each speed.

Acceleration and Deceleration Rates and Configuration:

The D1086/D280 'S' Shape Curve Board is factory preset with the J1 jumper in the 1-2 position. This configuration provides two Acceleration rates (ACC1, ACC2) and three Deceleration rates (DCC1, DCC2, and DCC3).

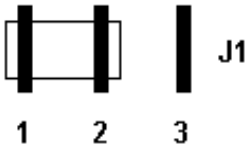

Figure One

Moving the jumper to the 2-3 position changes the ACC2 potentiometer to a fourth Deceleration pot. In this position there are four deceleration rates (DCC1, DCC2, DCC3, and ACC2) and only one Acceleration rate pot (ACC1).

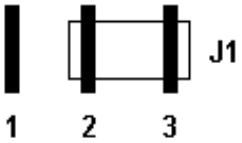

Figure Two

'S' Shape Curve Knee Settings

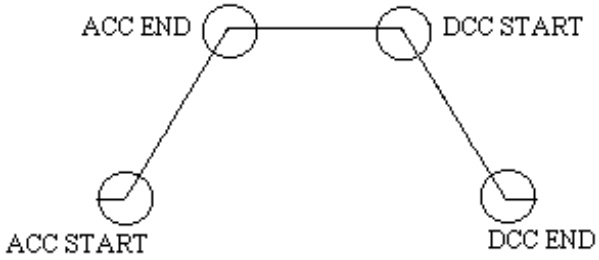

Figure Three

The 'S' shape of the output pattern is controlled by potentiometers P1 through P4. The curve will be very smooth with the pots fully counter-clockwise and very sharp with the pots fully clockwise. These adjustments will have more effect when the acceleration or deceleration rates are slow and will have less effect when the acceleration and deceleration rates are fast.

Dead Zone Time Delay

The Dead Zone Time Delay allows the control reference output signal at TB2-9 to ramp to zero-speed during the interval between the drop out of the Run input direction signal, and the engagement of the mechanical brake. The time delay circuit will produce a delay in forcing the reference signal at TB2-9 from the selected speed (SP1-5,HI) to Zero volts upon dropping the UP or DN input contacts (TB3-35,36,37). This delay time is adjustable from 10 milliseconds to 0.5 seconds with the R54 potentiometer.

R54 Full Counter-clockwise	0.5 second delay
R54 Full Clockwise	10 millisecond delay

SECTION THREE
INSTALLATION INSTRUCTIONS

INTRODUCTION

The following section contains hook-up notes and drawings for the model D1086/D280 Generator Field Control with 'S' Shape Curve. The hook-up notes refer to the hook-up diagram supplied as part of this manual.

THE D1086/D280 SHOULD BE INSTALLED, ADJUSTED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL EQUIPMENT IN THE ELEVATOR SYSTEM. PERSONAL INJURY AND/OR EQUIPMENT DAMAGE MAY OCCUR IF INDIVIDUALS ARE NOT FAMILIAR WITH THE HAZARDS REZULTING FROM IMPROPER OPERATION.

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INPUT CONNECTIONS

All connections are referenced to the hook-up diagram. The configuration that is shown in the hook-up diagram is not a recommendation, it is only one of many possibilities.

SPEED SELECTION CONTACTS

Contacts must be arranged to select only one speed input at a time. Simultaneous input selection may overload the circuit board power supplies.

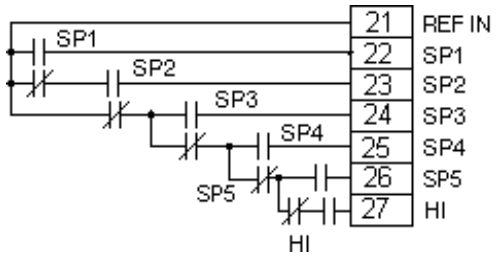


Figure Four

RUN CONTACTS

The D1086 is a Uni-Directional control. In order to work properly with the D1086, the D280 'S' Shape Curve Board must be configured to run in the UP direction only. If you would like to utilize the Dead Zone Time Delay feature of the D280 board, you may insert a contact from terminal 35 (+15) to terminal 36 (UP). This contact must close to enable the elevator to run and open to enable the Dead Zone feature (during the setting of the brake). If you do not wish to utilize the Dead Zone feature, a jumper may be used to configure the D280 board to run in the UP direction.

SUPPLY VOLTAGE

Connect a 208 to 230 Volt 50/60Hz Single Phase AC line to L1 and L2 of TB1 on the D1086 Board (bottom Board). Internal 5 Amp fusing is provided on the D1086 board.

OUTPUT POWER CONNECTIONS

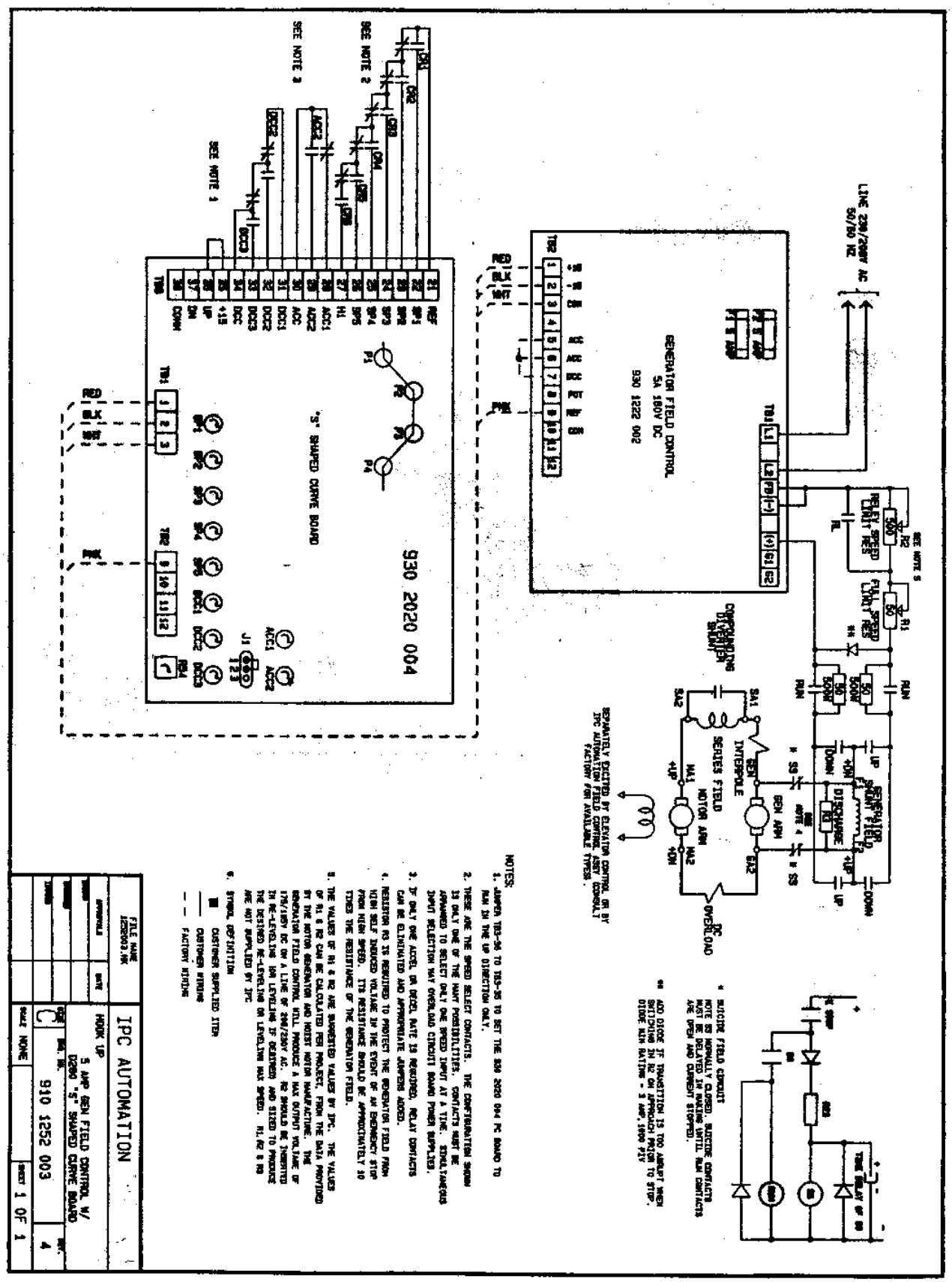
Refer to the hook-up diagram for all output power connections. The use of 16 AWG or higher rated wire for all Generator Field connections is recommended.

GENERATOR FIELD CONNECTION

Connect the generator field to "+" and "-" on TB1 of the D1086 (bottom) Board. Ensure proper polarity of the field connections to avoid improper operation or damage to the control.

FEEDBACK CONNECTION

Connect a jumper from "-" to "FB" on TB1 of the D1086 (bottom) board.
Failure to install this jumper will cause the control to produce full output voltage when any speed is selected.


LINE 230/208V AC 50/60 HZ
GENERATOR FIELD CONTROL 5A 180V DC 930 1222 002
930 2020 004
"S" SHAPED CURVE BOARD
SEE NOTE 1
SEE NOTE 2
SEE NOTE 3
SEE NOTE 5
RUN
UP
DOWN
SERIES FIELD
INTERPOLE
MOTOR ARM
OVERLOAD
NOTES:
1. JUMPER TB3-56 TO TB3-58 TO SET THE BRN 2020 004 PC BOARD TO RUN IN THE UP DIRECTION ONLY.
2. THESE ARE THE SPEED SELECT CONTACTS. THE CONFIGURATION SHOWN IS ONLY ONE OF THE MANY POSSIBILITIES. CONTACTS MUST BE ARRANGED TO SELECT ONLY ONE SPEED INPUT AT A TIME. SIMULTANEOUS INPUT SELECTION MAY OVERLOAD CIRCUIT BOARD POWER SUPPLIES.
3. IF ONLY ONE ACCEL OR DECEL RATE IS REQUIRED, RELAY CONTACTS CAN BE ELIMINATED AND APPROPRIATE JUMPERS ADDED.
4. RESISTOR R3 IS REQUIRED TO PROTECT THE GENERATOR FIELD FROM HIGH SELF INDUCED VOLTAGE IN THE EVENT OF AN EMERGENCY STOP FROM HIGH SPEED. ITS RESISTANCE SHOULD BE APPROXIMATELY 10 TIMES THE RESISTANCE OF THE GENERATOR FIELD.
5. THE VALUES OF R1 & R2 ARE SUGGESTED VALUES BY IPC. THE VALUES OF R1 & R2 CAN BE CALCULATED FOR PROJECT FROM THE DATA PROVIDED BY THE MOTOR GENERATOR AND HOIST MOTOR MANUFACTURE. THE GENERATOR FIELD CONTROL WILL PRODUCE A MAX OUTPUT VOLTAGE OF 175/185V DC ON A LINE OF 208/230V AC. R2 SHOULD BE INSERTED IN RE-LEVELING 10A LEVELING IF DESIRED AND SIZED TO PRODUCE THE DESIRED RE-LEVELING OR LEVELING MAX SPEED. R1, R2 & R3 ARE NOT SUPPLIED BY IPC.
6. SYMBOL DEFINITION
CUSTOMER SUPPLIED ITEM
CUSTOMER WIRING
FACTORY WIRING
* SILICON FIELD CIRCUIT NOTE RS NORMALLY CLOSED, SILICON CONTACTS MUST BE DELAYED IN MAKING UNTIL RUN CONTACTS ARE OPEN AND CURRENT STOPPED.
** ADD DIODE IF TRANSITION IS TOO ABRUPT WHEN SWITCHING IN R2 ON APPROACH PRIOR TO STOP. DIODE MIN RATING - 3 AMP, 1000 PIV
SEPARATELY EXCITED BY ELEVATOR CONTROL OR BY IPC AUTOMATION FIELD CONTROL ASSY ACCRALIT FACTORY FOR AVAILABLE TYPES.
IPC AUTOMATION
HOOK UP
5 AMP BRN FIELD CONTROL W/ D2B0 "S" SHAPED CURVE BOARD
910 1252 003
SHEET 1 OF 1