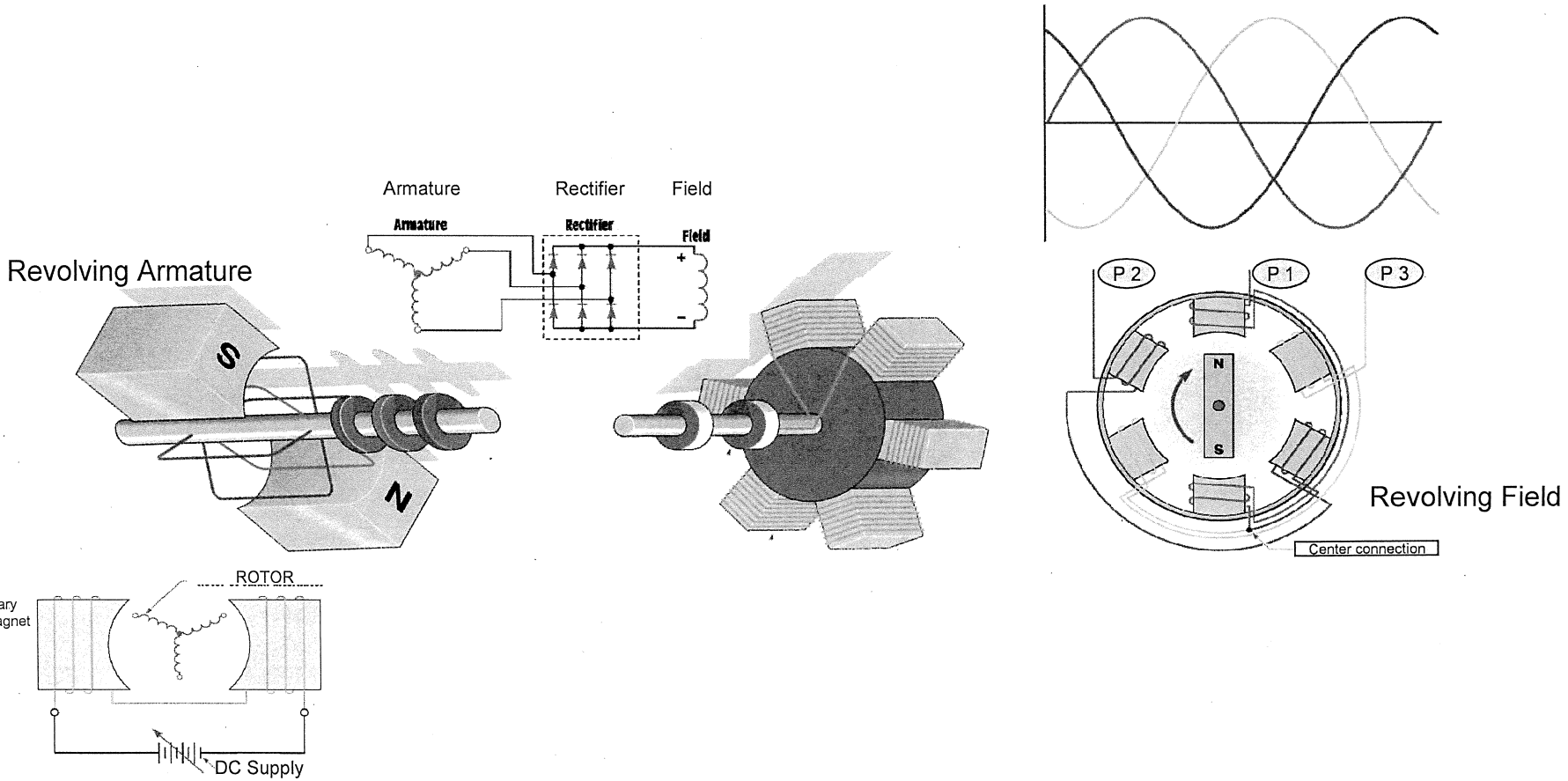
AC Alternators



CONNECTIONS FOR OPERATION OF AC MACHINE AS A THREE PHASE ALTERNATOR

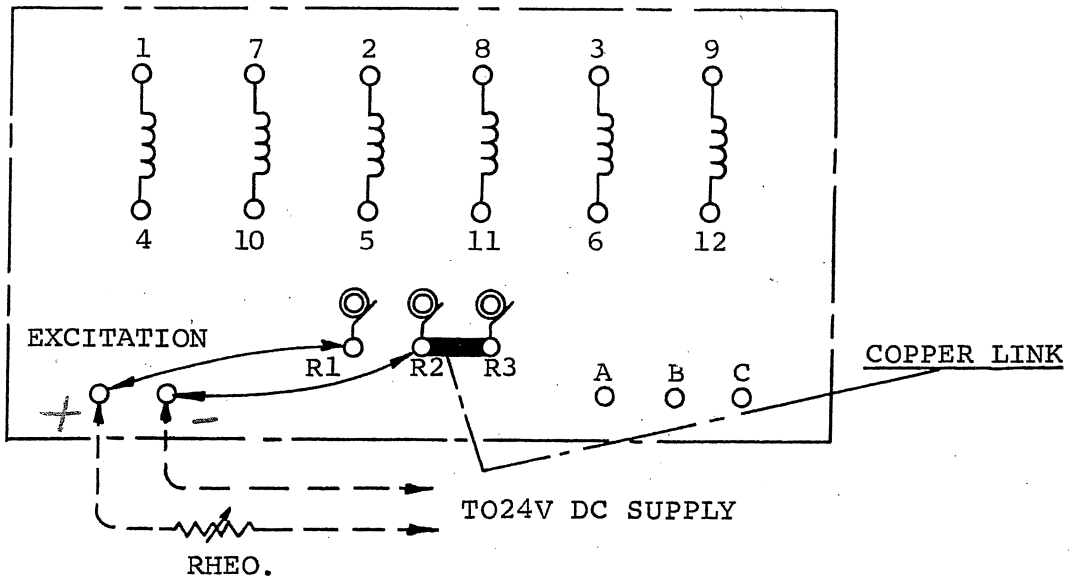
A. For operation of this machine as a three phase alternator refer to connection diagram for various stator connections which may be made by using the links and cords provided.

B. After selecting the mode of operation desired and making the connections including the field excitation circuit as shown on connection diagram the motor may then be driven by the shunt connected DC motor previously described under DC shunt motor operation. Again it will be noted that this machine must be operated at 1800 RPM to produce 60 cycles, and due to weak field at 1800 RPM, the DC motor will become unstable. Where possible, operate at lower speeds and lower frequencies for more stable operation.

C. The following modes of operation will produce voltages listed. At 60 cycle:

1. Two parallel Delta connections; 127V, 3-phase, 60 cycle, 800V amperes
2. Two parallel Wye connections; 220V, 3-phase, 60 cycle, 800V amperes
3. Series Delta connection; 254V, 3-phase, 60 cycle output, 800V amperes
4. Interconnected Wye; 380V, 3-phase, 60 cycle output, 800V amperes
5. Series Wye connection; 440V, 3-phase, 60 cycle output, 800V amperes

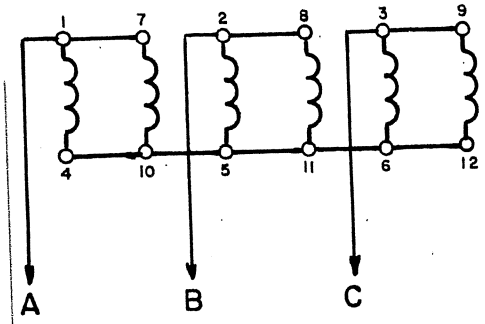
H-TA TERMINAL PANEL

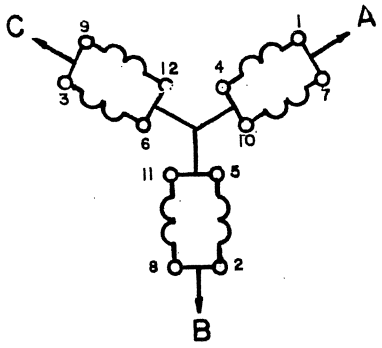


CONNECTION DIAGRAM FOR THREE PHASE ALTERNATOR

H-TA TERMINAL PANEL

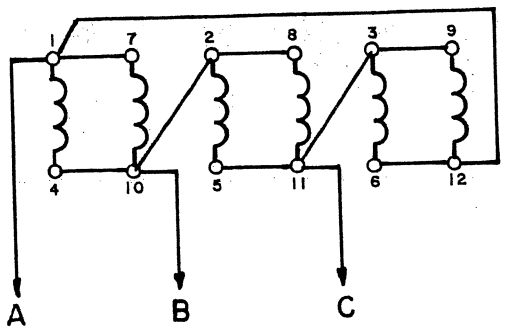
SCHEMATIC DIAGRAM

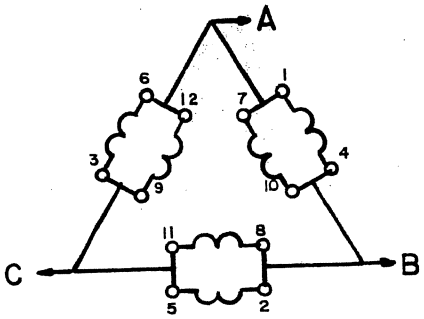




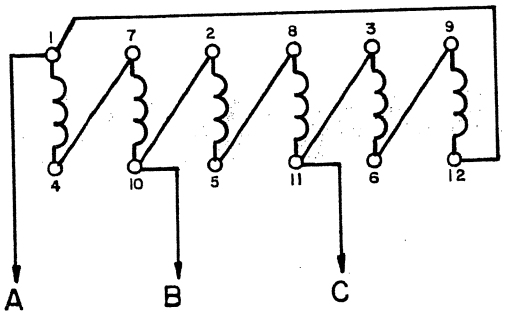
Use this hookup

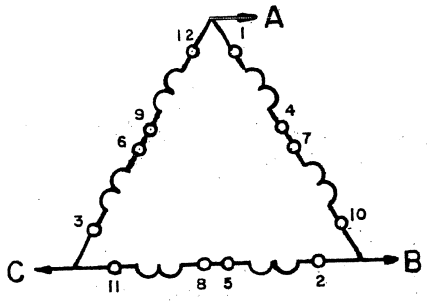
220V. 3Ø 60∿ PARALLEL WYE



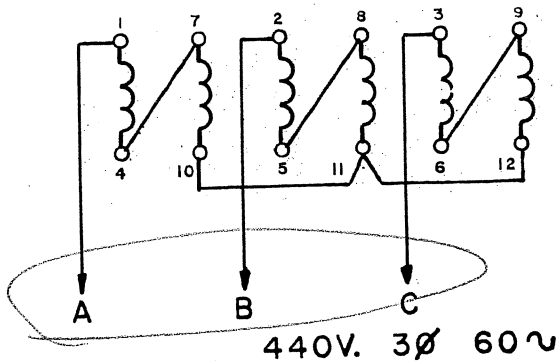


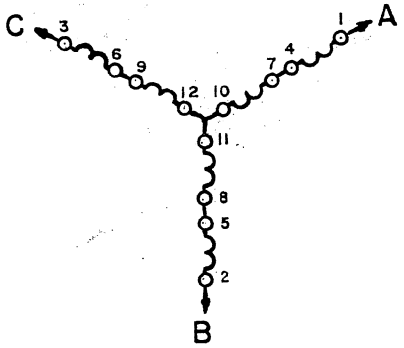
127V. 3Ø 60∿ PARALLEL DELTA





254V. 3Ø 60∿ SERIES DELTA





440V. 3Ø 60∿ SERIES WYE

TO WYE CONNECTED RESISTOR BANK

THREE PHASE STATOR CONNECTIONS

W-561-13B

Hampden ENGINEERING CORPORATION EAST LONGMEADOW, MASS.

TERMINAL PANEL H-TAD-1

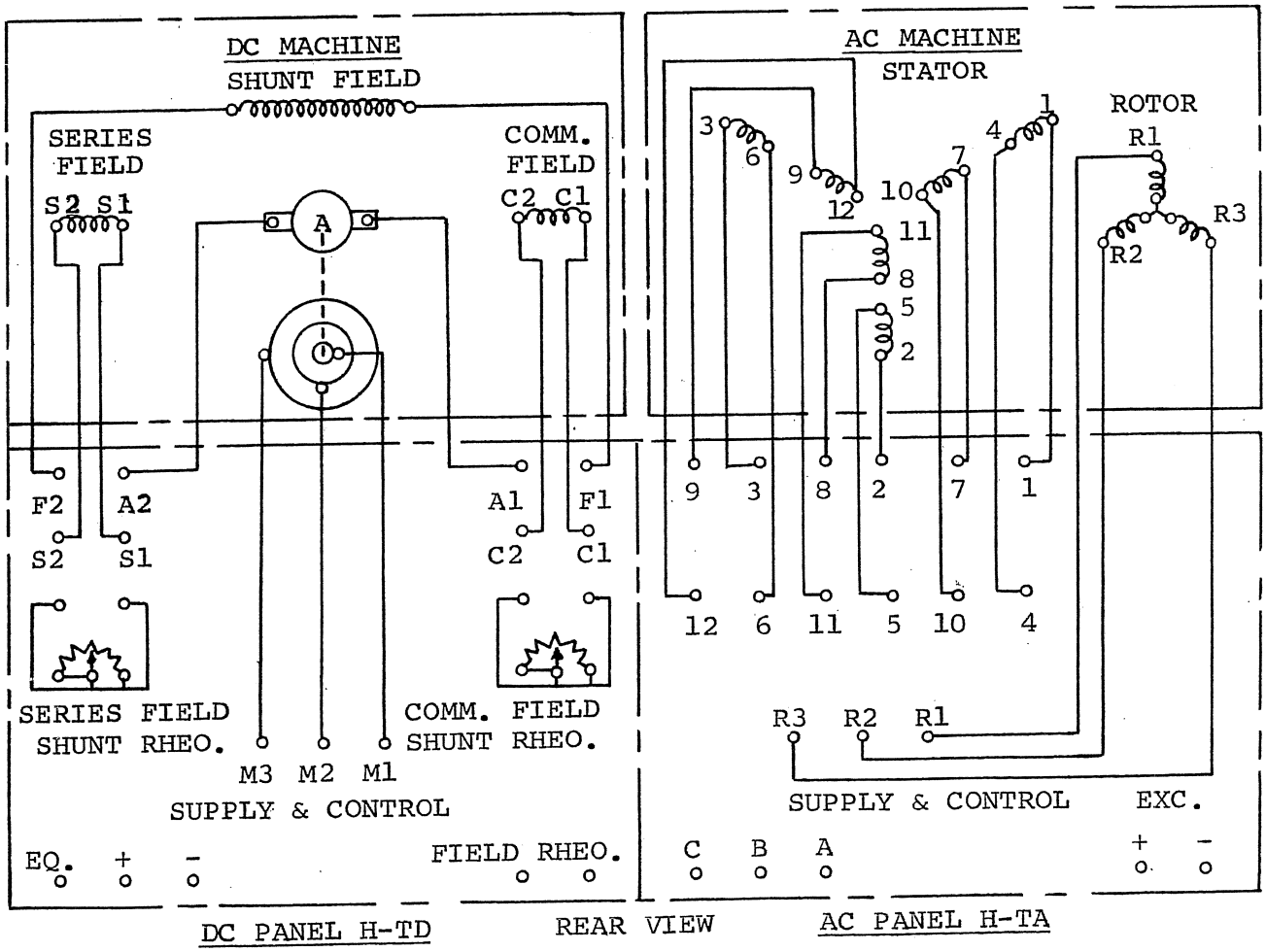
For use with the AC-DC machine a terminal connection panel is provided equipped with high quality binding posts. A series field shunt rheostat is provided on this panel which may be used as a speed control rheostat when operating machine as a series connected motor and as a voltage control rheostat when using the machine as a series connected generator or for varying the amount of compounding of a compound connected generator.

A commutating field shunt rheostat is also provided on this terminal panel which may be used for varying the amount of interpole flux in order to obtain the best commutation when the machine is being operated as a synchronous rotary converter or inverted converter.

When ordered with the machine the terminal panel is normally furnished attached to the machine with all wiring connections completed to the machine.

Various windings and machine symbols are graphically shown on the front of the terminal panel.

The terminal panel is supplied with a common enclosure attached to the machine with two separate front panels, one for the AC section of the machine and one for the DC section.



CONNECTIONS FOR OPERATION OF DC MACHINE AS A COMPOUND MOTOR

A. For operation of this machine as a compound motor refer to connection diagram.

B. It will be noted from the diagram that a DC starter, H-DS-1, is required as well as a shunt field rheostat (250 ohms) for speeds above normal and a 125V DC power supply.

C. With the above items available, make all the connections as shown on the connection diagram by means of patch cords and links provided.

D. The terminals of the H-TAD-1 panel marked "+ and -" are for termination of a remote 125V supply such as from a main switchboard. If no such source is connected, then a local source or portable 125V supply must be used to provide the 125V DC operating power. The shunt field rheostat indicated in the diagram may be located remote such as at the main laboratory board, or if a type H-MG-1 bench mounted control panel is supplied it will be mounted thereon. If the rheostat is not connected to the terminal marked "rheostat" a portable 250 ohm rheostat may be used.

E. After all connections have been made, check the position of the Auxiliary Field Switch on the starter panel to be sure it is set to the "out" position. Next set the shunt field rheostat to the minimum resistance position. Now to start the machine, advance the starter handle one step at a time until it is at maximum. The machine will now be operating at its normal speed. Check the rotation of the machine. If it is rotating in the reverse of the desired rotation stop the machine and interchange connections C1 and A1, then restart the machine.

F. To obtain speed above normal, the shunt field rheostat may be operated to increase speed as desired. To reduce speed below normal, turn the shunt field rheostat to minimum resistance position, then move the starter handle counter-clockwise one step at a time to reduced speed desired.

G. Care must be exercised that the shunt field circuit is completed and not accidently disconnected during starting or running operations. It will be noted that connection diagram also shows optional dynamic breaking with a compound motor. For dynamic breaking additional items are required consisting of a double-pole, double-throw switch, a 300 ohm resistor with minimum rating of 160 watts. To start the motor for dynamic breaking put the double-throw switch in the "run" position and start the motor the same as heretofore described. The amount of dynamic breaking can be varied by adjustment of the shunt field rheostat.

AUTOMATIC DC STARTER

GENERAL:

The H-DS-1A Automatic Starter replaces the H-DS-1 Manual Starter shown in the attached REMLAB Instruction Manual. This starter is either provided as an individual panel as shown on Page 1B or built into the H-REM-1C Console. The starter is an automatic 2-step reduced voltage type with overload and field failure protection.

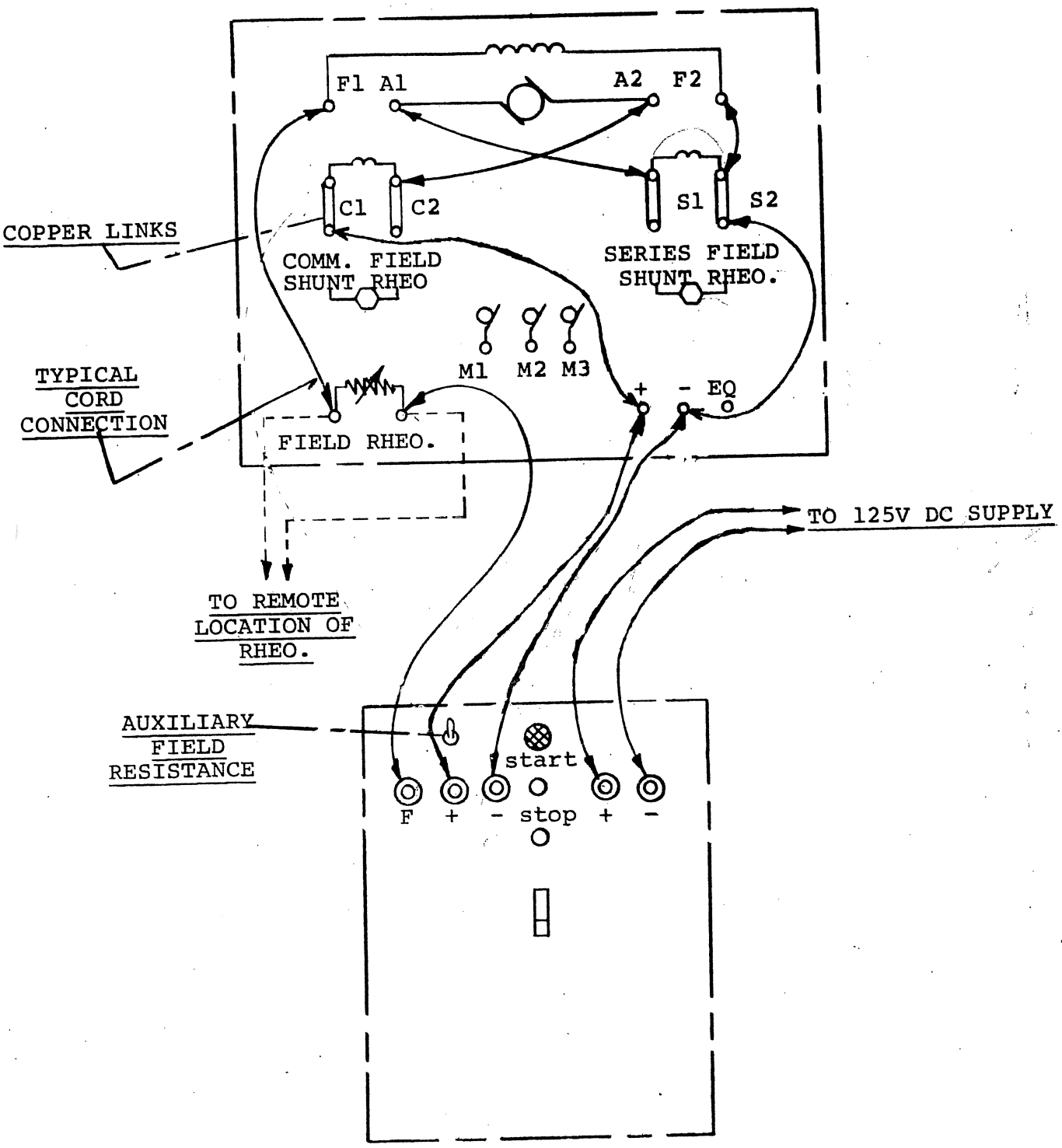
OPERATION:

The 125 volt DC Supply when connected to the "+" and "-" input jacks on the right side of the panel is fed through the 2-pole circuit breaker which provides overload protection. The negative leg of the supply is then brought out to the "-" terminal on the left side. The positive leg is wired through a 2-step starting resistor to the "+" terminal on the left. A field failure relay is wired between the positive leg of the supply and the "F" jack. The connection diagram on Page 1B is a typical illustration of the method of connecting the automatic starter.

Refer to the following table for a cross reference of terminal jack designations of the starters. This should serve as a further aid in connecting the automatic starter using the connection diagrams for the manual starter.

AUTOMATIC	MANUAL
INPUT "-" JACK	"L2" JACK
INPUT "+" JACK	"L1" JACK
OUTPUT "-" JACK	"L2" JACK
OUTPUT "+" JACK	"A" JACK
OUTPUT "F" JACK	"F" JACK

H-TD TERMINAL PANEL



H-DS-1A

AUTOMATIC STARTER

CONNECTION DIAGRAM FOR COMPOUND MOTOR

Procedure	V_{DC2}	I_{DC2}	V_{DCEXC}		RPM_{DC}	RPM_{AC}	Hz_{ALT}	$V_{PH\ A}$	$V_{PH\ B}$	$I_{LINE\ B}$		W_{CALC}	W_{SW1-10}	$R_{heo\ A}$	$R_{heo\ B}$	Other
Cumulative Compound	*Hook up DC Motor as per drawing. Start up motor. Verify rotation matches direction of arrow on top of MG set.*															
I. Clutch OFF Vexc=0	*125 V*		0 V										ALL OFF	MIN	MAX	
II. Clutch ON Vexc=0	*125 V*		0 V										ALL OFF	MIN	MAX	
III. Clutch ON Vexc=27.4v	*125 V*		27.4 V										ALL OFF	MIN	MAX	
	125 V		27.4 V										SW1	MIN	MAX	
	125 V		27.4 V										SW1-2	MIN	MAX	
	125 V		27.4 V										SW1-3	MIN	MAX	
	125 V		27.4 V										SW1-4	MIN	MAX	
	125 V		27.4 V										SW1-5	MIN	MAX	
	125 V		27.4 V										SW1-6	MIN	MAX	
	125 V		27.4 V										SW1-7	MIN	MAX	
	125 V		27.4 V										SW1-8	MIN	MAX	
	125 V		27.4 V										SW1-9	MIN	MAX	
	125 V		27.4 V										SW1-10	MIN	MAX	
IV. Change 3 Phase Load																
Adjust MG=1800 RPM	*125 V*		27.4 V										ALL OFF	INCR.	MAX	
V. MG=1800 RPM Vexc=0	*125 V*		0 V										ALL OFF	INCR.	MAX	
VI. Vexc=27.4v MG=1500	*125 V*		27.4 V										ALL OFF	DECR.	MAX	
VII. Reverse DC Direction	*125 V*		27.4 V										ALL OFF	MIN	MAX	
Differential Compound																
VIII. Clutch OFF Vexc=0	*125 V*		0 V										ALL OFF	MIN	MIN	
IX. Clutch ON Vexc=0	*125 V*		0 V										ALL OFF	MIN	MIN	
X. Clutch ON Vexc=27.4v	*125 V*		27.4 V										ALL OFF	MIN	MIN	
Increase Series Field Rheostat	*125 V*		27.4 V										SW1	MIN	INCR.	
	125 V		27.4 V										SW1-2	MIN		
	125 V		27.4 V										SW1-3	MIN		
	125 V		27.4 V										SW1-4	MIN.		
	125 V		27.4 V										SW1-5	MIN		
	125 V		27.4 V										SW1-6	MIN		
	125 V		27.4 V										SW1-7	MIN		
	125 V		27.4 V										SW1-8	MIN		
	125 V		27.4 V										SW1-9	MIN		
	125 V		27.4 V										SW1-10	MIN		