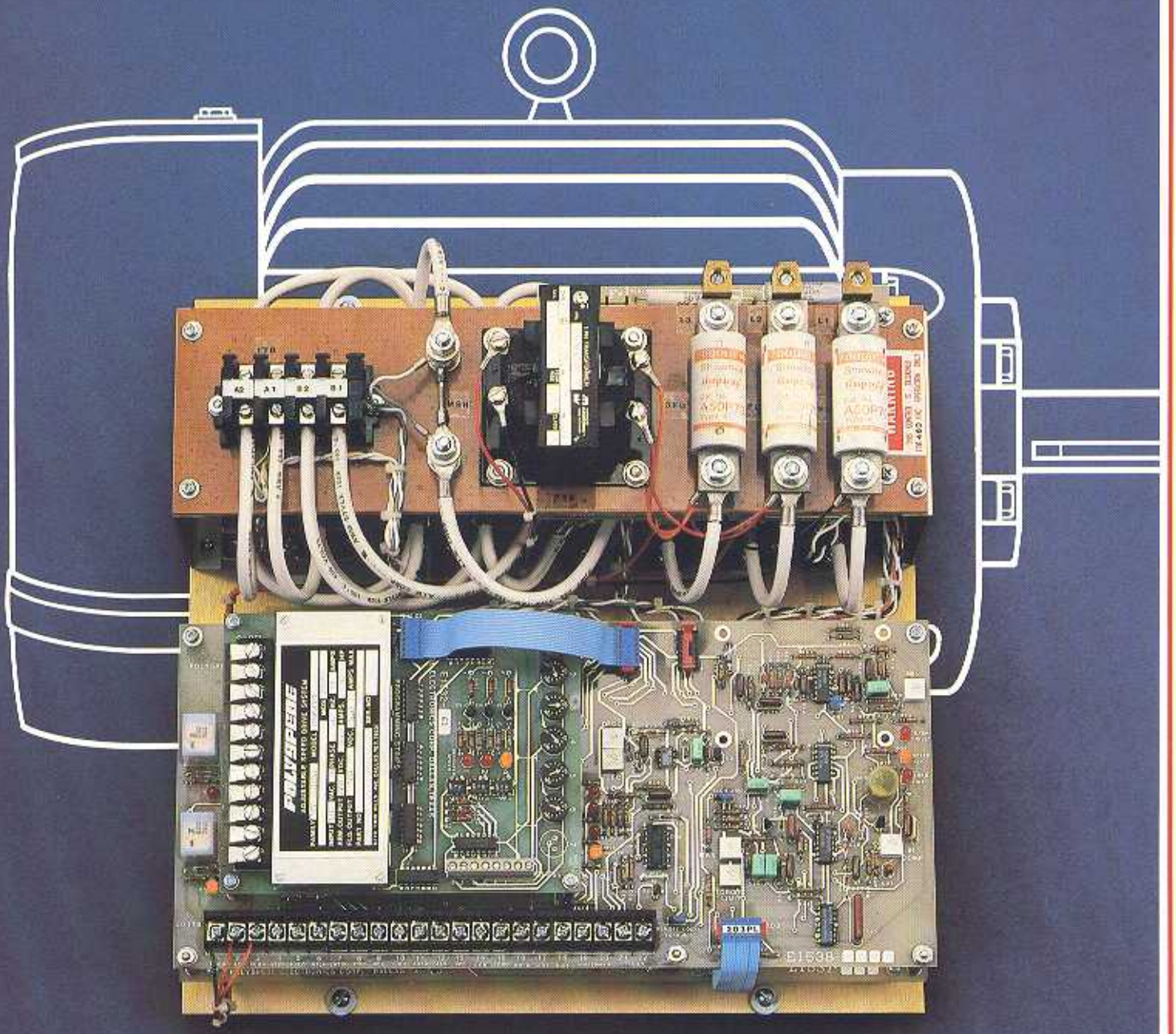
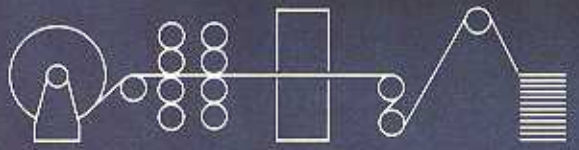
3 Phase Input

6 SCR DC Speed Control

Series HP — 3 thru 40 hp





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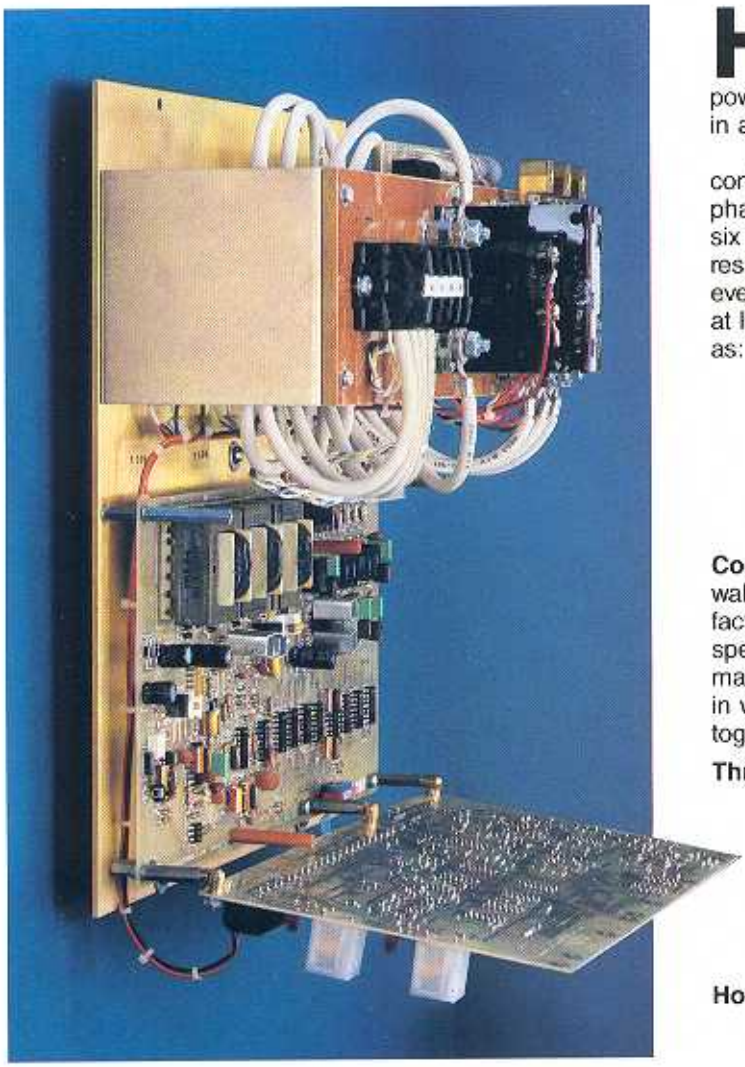


HP stands for High Performance. That is: accurate speed regulation; repeatable speed settings; large power capacity in a small space; and long life in a tough industrial environment.

In the Polyspede HP Series of speed controls for DC motors, the 230 or 460 VAC, 3 phase, full wave, 6 SCR power section delivers six pulses for every cycle of AC input. The result is smoother, cooler motor operation — even where high continuous torque is required at low speeds in such demanding applications as:

Web printing presses
Paper mill machinery
Plastic film production lines
Automated welding equipment
Sheet metal slitters
Textile machinery

Compact Design. Series HP saves valuable wall space, or space on the machinery itself. In fact, in some situations it may be the only speed control that will fit. This compactness is made possible by the efficient thermal design, in which the base plate and enclosure act together as a heat sink.

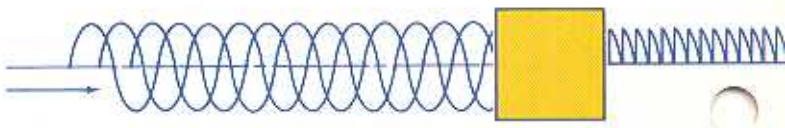
Three basic types are available:

BHP Forward only. No armature contactors.

FHP Forward only. Includes one armature contactor.

RHP Solid state reversing. Includes two armature contactors and dynamic braking.

Horsepower ratings range from
3 thru 20 hp (230 VAC input)
5 thru 40 hp (460 VAC input)
The horsepower range can be extended by the use of separate, panel mounted SCR's.



Current sensing shunt (bottom board). Provides a low-voltage (millivolts) signal proportional to armature current.

Power-On timer. Allows 200 milliseconds to elapse to insure power supply stability before starting.

Manual/automatic reversing selection. (For automatic, remove the jumper.) "Remembers" a reverse command and causes the motor to dynamic brake to zero speed and then to reverse without an additional START operation.

CMOS logic. Has high noise immunity, low power supply drain.

Built-in signal isolation (bottom board). Standard equipment. Permits connecting the speed pot control common to earth ground.

Digital ramp generator (bottom board). No phase angle mismatch between lines.

Line isolation. Impedance isolated armature feedback and transformer isolated shunt feedback signals (bottom board). No other circuitry is hot in respect to the AC lines.

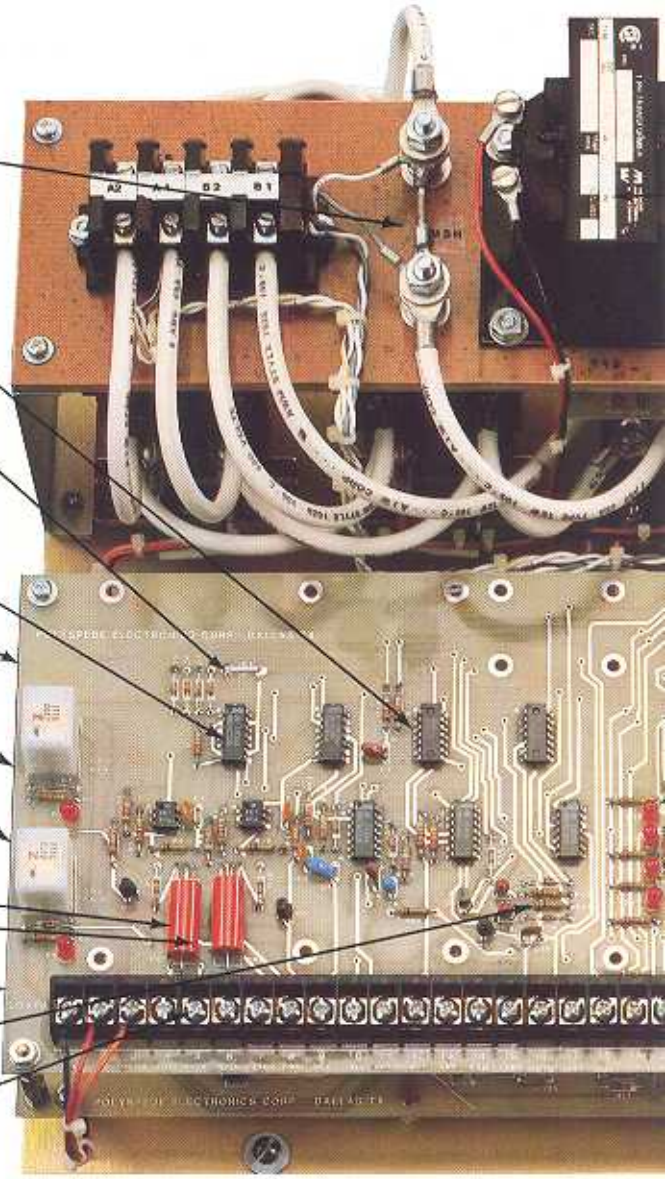
Reed relays. Reduce electrical noise.

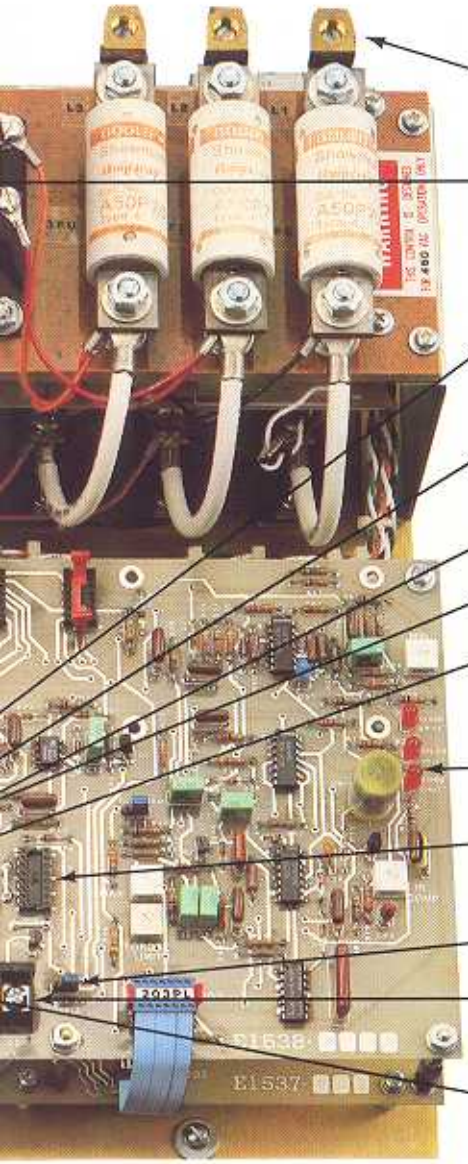
Latching network. Allows use of simple momentary contact push buttons for operator commands.

50 or 60 Hertz input selection. (For 50 Hertz, cut Jumper JP1 on the bottom board.)

Contactor timing and interlocks. Insure zero current switching in models with contactors, thus extending contactor life.

Push button interface. Isolated 12 VDC circuitry.





Phase insensitive AC input.

Control transformer (460 VAC input models only).

Accel./Decel. Independent, timed acceleration and deceleration ramps adjustable from 0.6 to 28 seconds.

Instantaneous overcurrent trip (IOT). Preset for 260% of rated current. LED fault indicator.

Phase loss protection. LED fault indicator.

Low line voltage protection. LED fault indicator.

Anti-plug protection. Prevents start-up or reversal of the drive until the motor armature reaches zero speed. LED's indicate forward or reverse operating mode.

Torque Limit LED indicator.

Provision for tachometer feedback DIP relay. Used with reversing controls.

Remote/local torque program selection jumper.

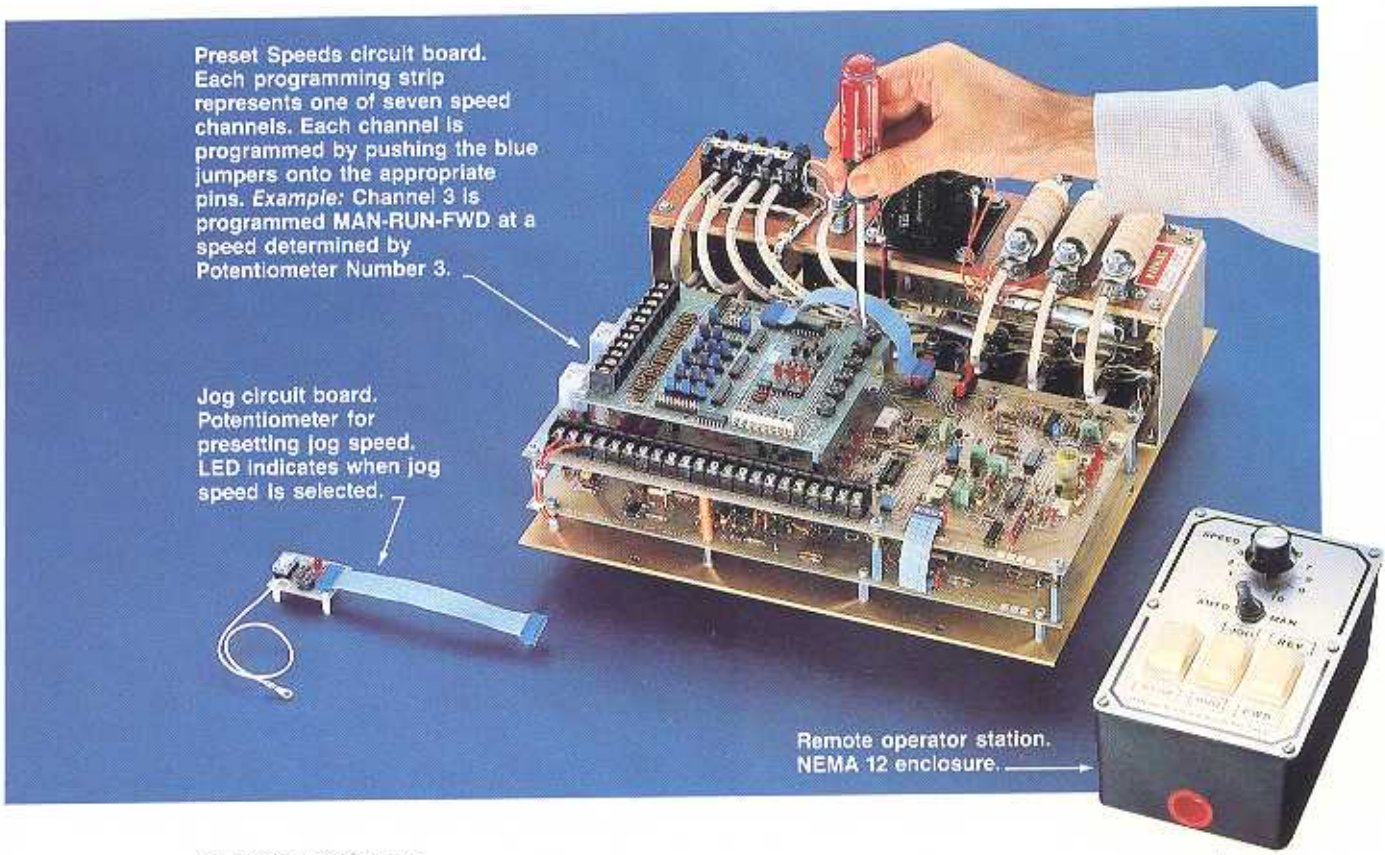
Tachometer feedback input terminals. For use with 1750 or 2400 rpm motors, together with a 50 VDC/1000 rpm tachometer.

Speed command input. 4 to 20 milliamp. (Or 0 to 6 VDC at Terminal 13.)

Options

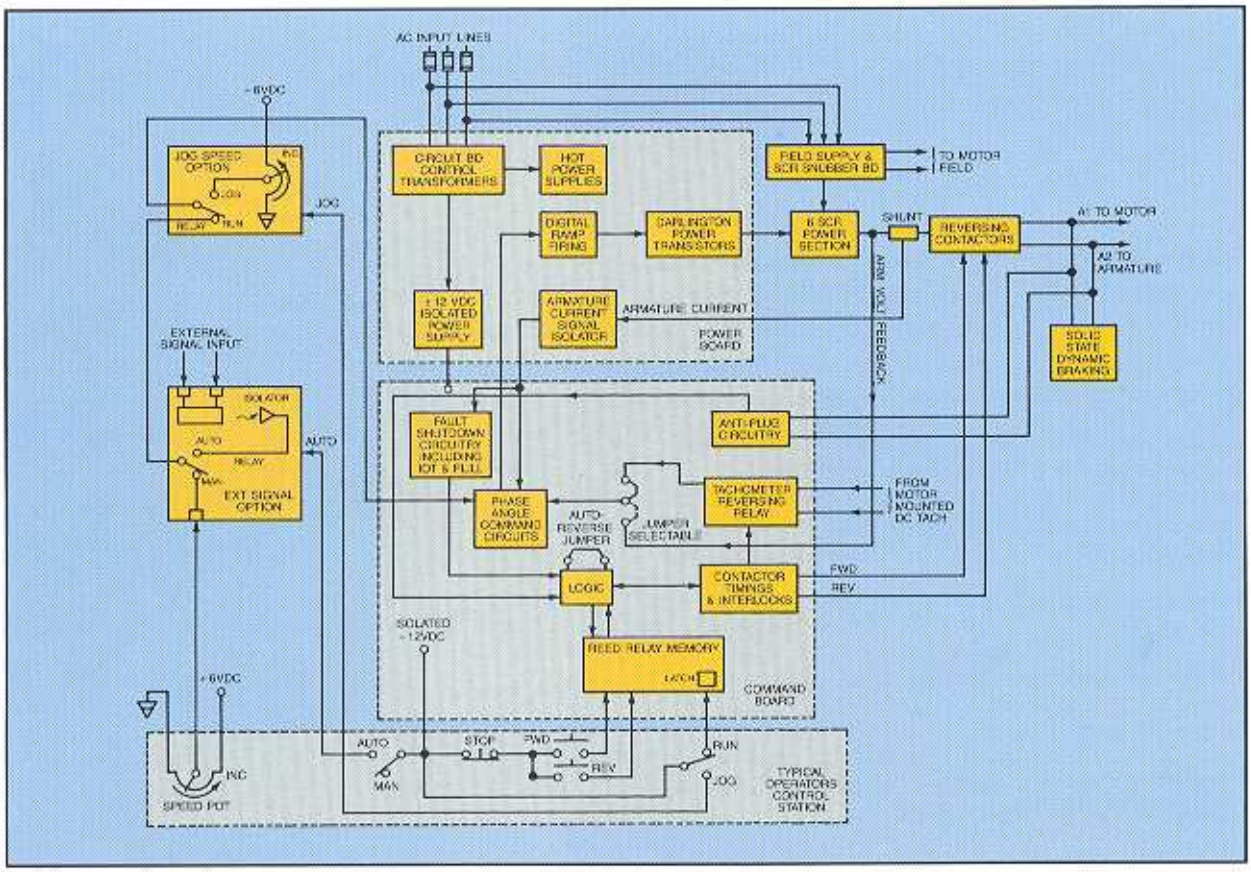
To meet your particular requirements, select only the options you need. These may be auxiliary circuit boards, or additional major components such as a remote operator station or a NEMA rated, steel enclosure for the main chassis.

In addition, Polyspede can design multi-drive engineered systems, using Series HP or other Polyspede controls. For details, please contact your nearest representative or our factory.



Other options:

- Inverse timed shutdown.
- External signal control with manual/auto selection: 1-5 ma, 4-20 ma, 10-50 ma; 0-10 VDC, 0-6 VDC.
- DC tach follower: 6-20 VDC, 20-65 VDC, 65-200 VDC.
- AC tach follower: 25-75 VAC, 75-230 VAC.
- Armature voltage follower: 0-90 VDC, 0-180 VDC, 0-230 VDC, 0-500 VDC.
- Field loss protection.
- Solid state dynamic braking (contactor not required).
- Tach feedback for reversing controls.
- Field economizing circuit (contactor operated drives only).
- Enclosure. NEMA 1, 4 or 12.
- 240 VDC field output on 230 VAC input controls.



Details of Operation

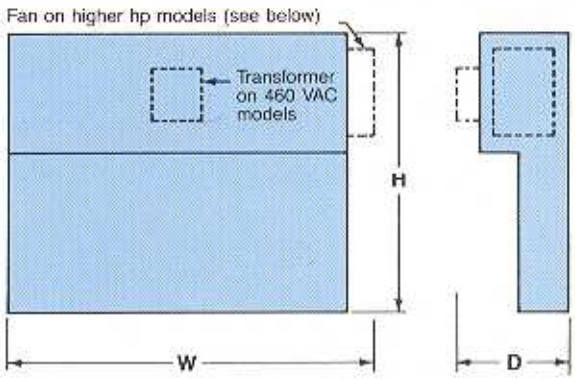
Shown above is a simplified block diagram of a typical Series RHP speed control. In this example, Jog and External Signal options are included.

All Series RHP (reversing) controls are supplied with solid state dynamic braking as a standard feature.

Solid state dynamic braking is also available as an option on Series FHP, and even on Series BHP controls (which do not use armature contactors).

Referring to the diagram, the 6 SCR Power Section is fired from Darlington power transistors that are controlled by the Digital Ramp Firing Section. Digital ramp firing permits balanced phase firing without adjustments.

Dimensions (Open Chassis)



3 thru 10 hp, 230 VAC: 14H × 14W × 5⅝D
15 thru 20 hp, 230 VAC: 14H × 15½W × 5⅝D
5 thru 25 hp, 460 VAC: 14H × 14W × 7D
30 thru 40 hp, 460 VAC: 14H × 15½W × 7D

Maximum shipping weight is 20 pounds for open-chassis controls.

Field Adjustments (Preset at Factory)

Function	Range
ACC	0.6 to 28 seconds
DEC	0.6 to 28 seconds
MIN	0 to 10% of rated output speed
MAX	75 to 105% of rated output speed
TORQUE LIMIT	0 to 200%
IR COMP	0 to 10% of rated output at full load

Ratings.

3-20 HP 230 VAC ± 10%, 3 phase, 50/60 HZ

5-40 HP 460 VAC ± 10%, 3 phase, 50/60 HZ

Overload capacity 150% for one minute

Speed regulation (percent of base speed)
± 1.0% with armature feedback
± 0.1% with tachometer feedback

Speed range 100:1 for specified regulation

Output voltage (3-20 HP, 230 VAC input)
Armature: 0 to 240 VDC
Field: 150 VDC (240 VDC optional)

Output voltage (5-40 HP, 460 VAC input)
Armature: 0-500 VDC
Field: 300 VDC

Ambient temperature 40 C maximum

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