

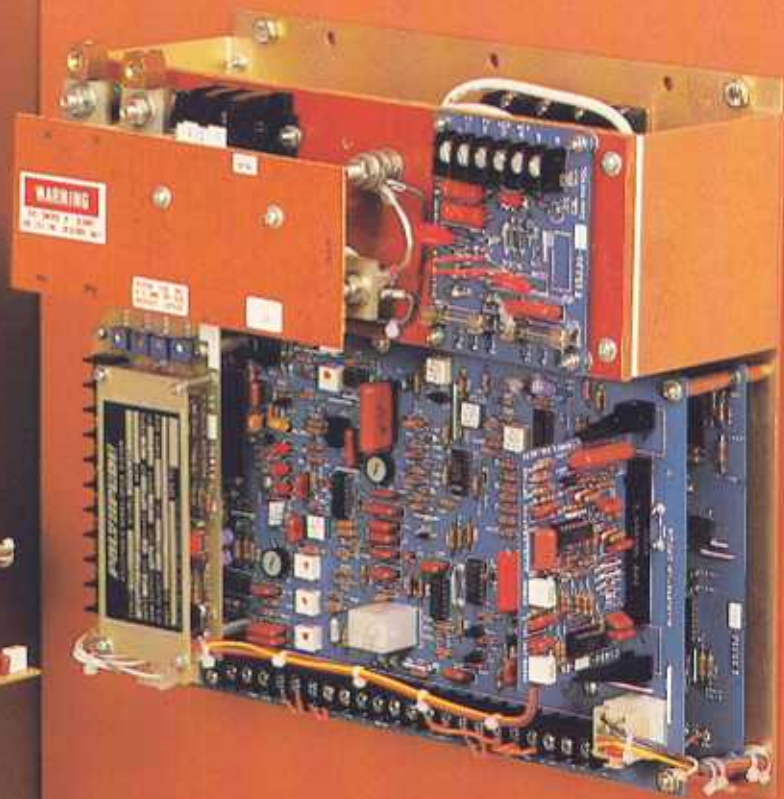
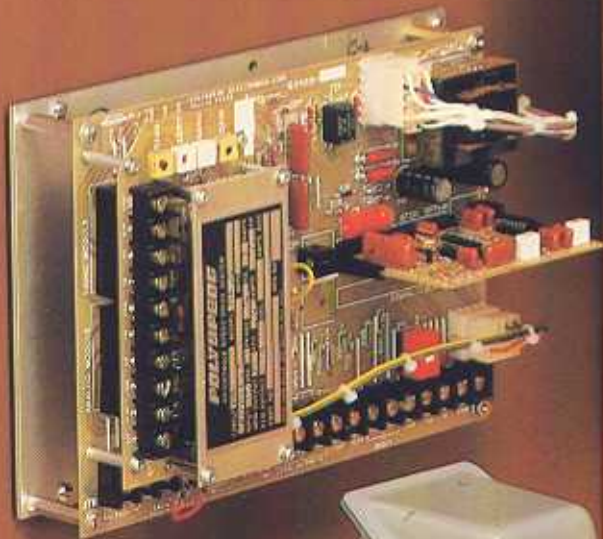
Regenerative DC Drives

PRD2

1/6-2 hp

PRD8

1/2-7 1/2 hp

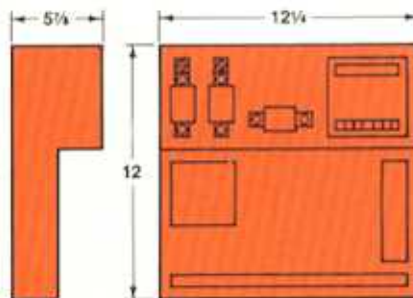


POLYSPEDE

**Polyspede
regenerative
DC drives
give you
rapid cycling
4 quadrant
motor speed &
torque control
with
no contactors**

PRD8

Full Wave

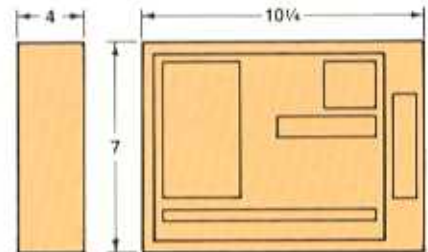
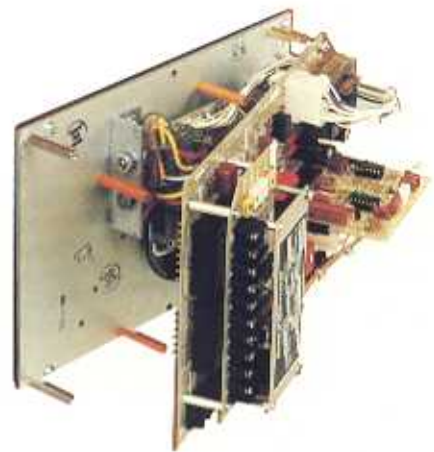


PRD8 Ratings

Horsepower: 1/2 thru 7 1/2.
 AC input voltage: 1 ϕ , 230 VAC \pm 20 V.
 AC input frequency: 60 Hz, convertible to 50 Hz.
 Armature output: 0 to 180 VDC.
 Field output: 200 VDC unregulated at 2 amp max, convertible to 100 VDC at 3 amp max.
 Ambient temperature: 40 C max in 20" \times 20" sealed enclosure.
 Overload capacity: 150% for 1 minute.
 Load regulation for 100% load change:
 W/armature feedback: \pm 1% of base rpm.
 W/tach feedback: \pm 0.1% of base rpm.
 Speed Range: 0 to \pm 100%.
 Speed range for specified regulation: 100 to 1.
 Frequency response: 12 Hz velocity loop, 12 Hz torque loop.
 Temperature coeff. of speed setting:
 max = 0.05% of base rpm per degree C.

PRD2

Half Wave



PRD2 Ratings

Horsepower: 1/4 thru 3/4 with 115 VAC input, 3/4 thru 2 with 230 VAC input.
 AC input voltage: 1 ϕ , 115 or 230 VAC, \pm 10%.
 AC input frequency: 60 Hz, convertible to 50 Hz.
 Armature output:
 0 to \pm 75 VDC with 115 VAC input.
 0 to \pm 150 VDC with 230 VAC input.
 Field output:
 W/115 VAC input: 100 VDC, unregulated, convertible to 50 VDC.
 W/230 VAC input: 200 VDC unregulated, convertible to 100 VDC.
 2 amp max with either voltage.
 Ambient temperature: 40 C max when mounted to the back wall of a 12" \times 10" \times 5" sealed enclosure.
 Overload capacity: 150% for 1 minute.
 Load regulation for 100% load change:
 W/armature feedback: \pm 1% of base rpm.
 W/tach feedback: \pm 0.1% of base rpm.
 Speed range: 0 to \pm 100%.
 Speed range for specified regulation: 20 to 1.
 Frequency response: 4 to 6 Hz velocity loop, 4 to 6 Hz torque loop.
 Temperature coefficient of speed setting:
 max = 0.05% of base rpm per degree C.

Note: For motor selection data, please refer to the Basic Manual for each model.

Both Models: General Description

The PRD8 and PRD2 are fast response, regenerative SCR DC speed controls. Supplied with single phase AC line voltage, they power industrial DC motors—starting, stopping, reversing, accelerating or braking in either direction.

When a PRD regenerative drive is signaled to brake the mechanical load, it causes the motor to act as a generator. The braking energy is sent back into the AC power lines, eliminating costly dynamic braking resistors. Besides simplifying the overall installation, the PRD also provides faster braking than is possible with non-regenerative drives.

A PRD drive is an excellent choice for high duty cycle indexing and reversing; controlling high inertia

loads; also hoisting or other applications requiring controlled hold-back torque.

Using the optional plug-in interface, the PRD8 is ideal for high resolution positioning servo applications.

The unique circuit design provides a 12 Hertz* velocity and torque loop response in the PRD8 (4 to 6 Hertz in the PRD2). In either model there are no overshoots during acceleration, deceleration or reversing.

PRD regenerative drives interface easily with programmable controllers, or directly with process instruments that provide an analog signal output.

*Frequency response is defined as the point where the drive can respond to only 70% of the sinusoidal signal modulations about a fixed operating point (based on data taken with the motor uncoupled from the load).

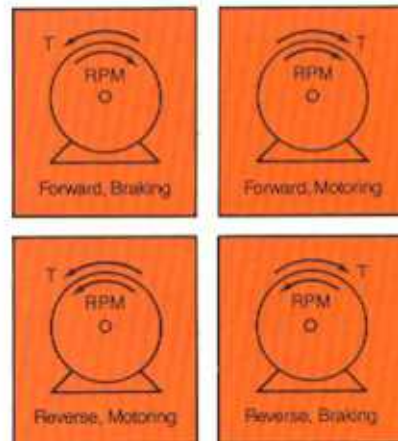
Features

- Contactorless braking and reversing.
- No AC line transformer required.
- Motor match adjustments (PRD8 only).
- No deadband at reversing (PRD8 only).
- Velocity and torque loop response is 12 Hertz in PRD8, 4-6 Hertz in PRD2.
- $\pm 1\%$ load regulation without tachometer feedback.
- Automatic fault shutdown and indicators (PRD8 only).
- Mode indicators (PRD8 only).
- Signal inputs and outputs isolated from AC line in PRD8. Optional signal input isolation in PRD2.
- Transient protection.
- Selectable tach or armature feedback.
- Speed potentiometer (shipped loose).
- Speed and torque meter terminals.
- External torque limit terminals.
- Simple interface with digital equipment through d/a converters.
- Compact, thermally efficient design.

4 Quadrant Operation

The term "4 quadrant" refers to the drive's ability to operate in any of 4 modes, as shown in the diagrams on the right.

The PRD can switch directly from any one of these modes to any other, *electronically*. No mechanical contactors or anti-plug circuits are required. The drive is designed for rapid and continuous cycling that would rule out an ordinary drive because of contact wear.

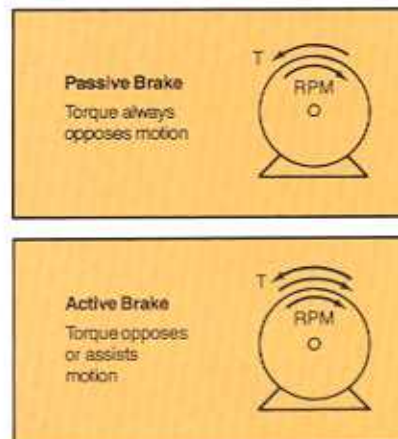


Torque Control & Programming

A frequently encountered torque control application is the *passive brake*, as used in some material unwinders. Here the PRD drive is set for zero speed. The motor becomes a generator, driven by an external force such as material being pulled from a feed spool. The motor applies a hold-back torque according to the torque limit potentiometer setting. The motor and drive act like an eddy current brake, except that low speed performance is much improved, and power is returned to the AC lines.

With the addition of the analog module for torque programming, the PRD drive and motor work together as an *active brake*. Responding to external torque signals, the PRD causes the motor to apply either hold-back or assisting (forward motoring) torque as needed.

In a specially engineered system, a single PRD can control a series of slave drives at matching, controlled torques.



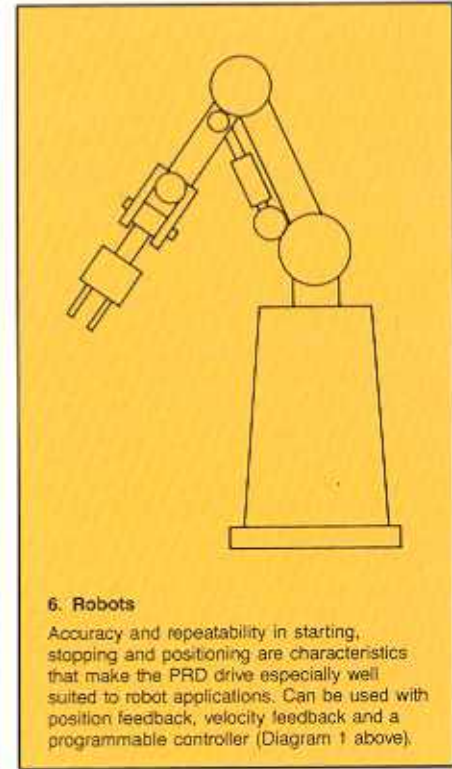
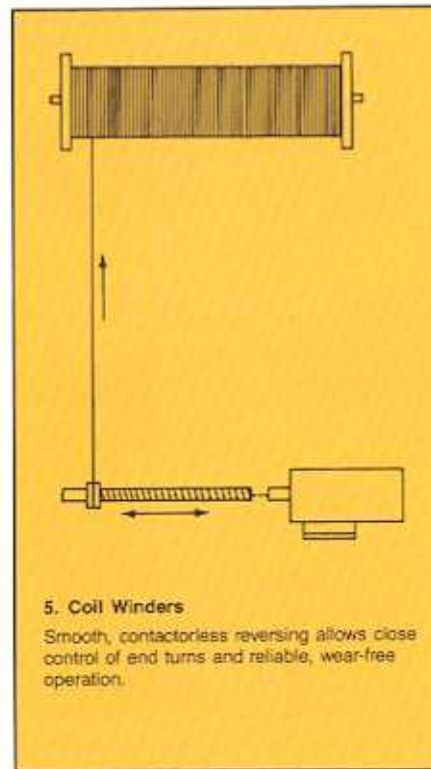
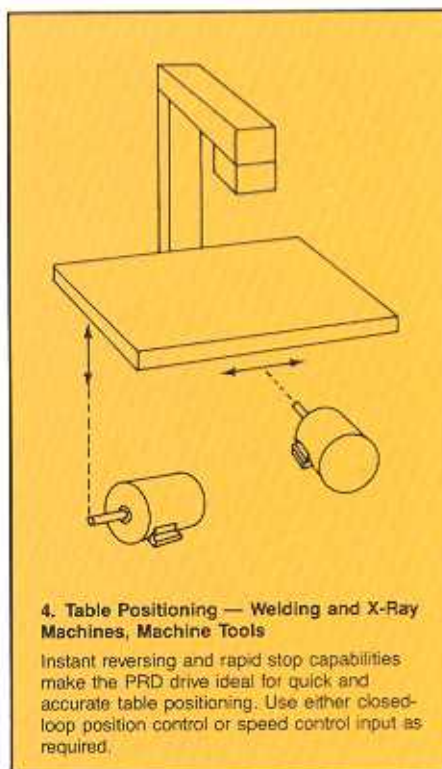
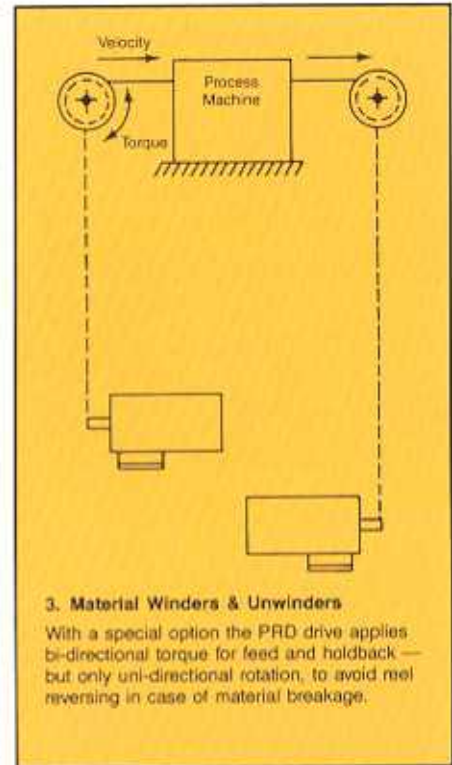
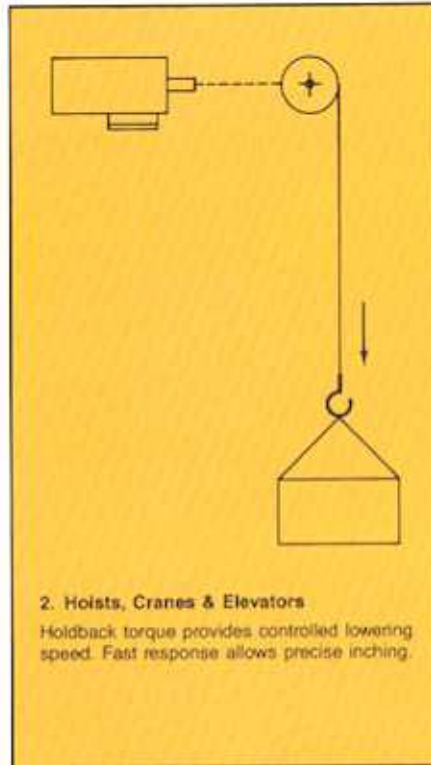
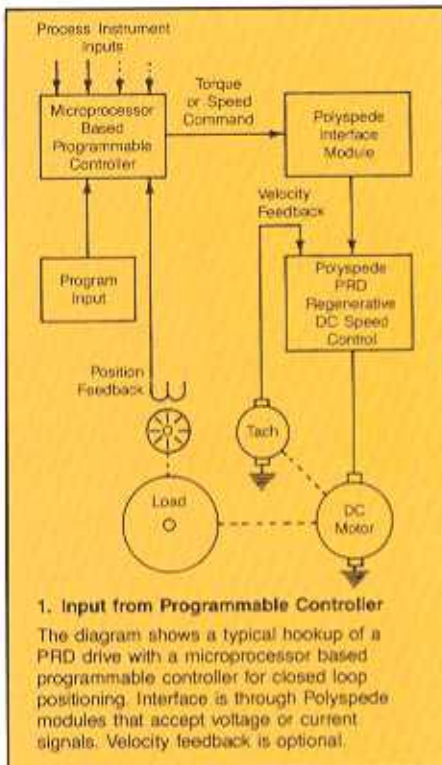
Options

Factory installed, plug-in or bolt-on.

- Adjustable linear accel/dec. Independently adjustable (2 pots). Adjustment range: 0.15 to 11 sec.
 - 0.30 to 24
 - 0.07 to 5
 - Position control interface. Includes provision for manual/auto switch, manual position potentiometer and end-of-travel limit switches.
 - Input: 1 - 5 ma DC 0 - 6 VDC
 - 4 - 20 ma DC 0 - 10 VDC
 - 10 - 50 ma DC 0 - 12 VDC
 - DC armature contactor.
 - DC armature/field contactor.
 - Tachometer feedback (50 VDC per 1000 rpm).
 - Torque programmed drive.
 - NEMA enclosures with local or remote operating stations.
- In addition, multi-drive engineered systems can be designed by Polyspede, using PRD8, PRD2 or other Polyspede controls. For details, please contact the nearest representative or the Richardson, Texas sales office.

POLYSPEDE

Some PRD8 & PRD2 Applications



POLYSPEDE

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