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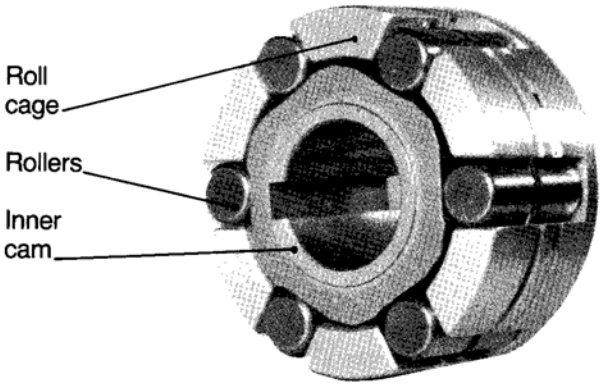
Bi-Directional, Automatic Overrunning Control.

Hilliard Bi-Directional Overrunning Clutches replace expensive shifting and drive train assemblies.

New Hilliard Bi-Directional Overrunning Clutches provide positive engagement automatically in either direction.

Manufactured exclusively by The Hilliard Corporation, these unique clutches feature rugged, field-proven components and are easy to service in the field.

Because they can overrun in either direction, Hilliard Bi-Directional Overrunning Clutches are ideal for such functions as bi-directional and dual-source drives. A specially designed unit was recently used by Polaris Industries to produce the first 4-wheel drive, all-terrain vehicle capable of providing automatic front-wheel drive engagement in both forward or reverse modes.



Features.

- Senses driving direction and automatically shifts to driving or overrunning modes.
- Proven roller-ramp design.
- Precision-machined components.
- Bearing support and alignment of cam to drive shaft as required.

Benefits.

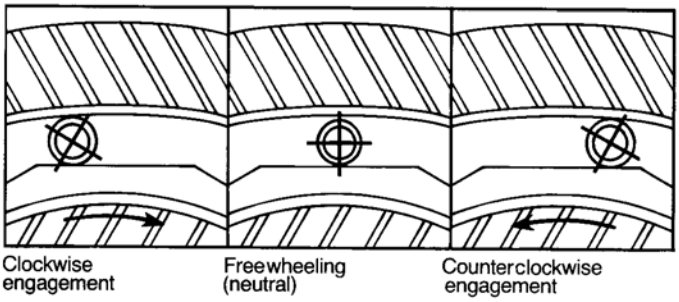
- Reliable, durable and long lasting.
- Positive engagement.
- Automatic disengagement.
- Constant drive maintained while engaged.

Long-lasting roller-ramp assembly.

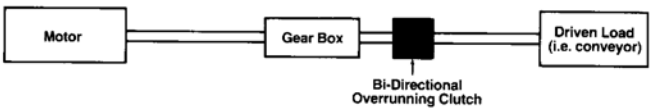
A bi-directional overrunning clutch allows the driven member of a machine to run ahead of the input regardless of the direction of rotation of the input member. This occurs when the input drive is slower than output (driven) member.

A key to the operation of the bi-directional clutch is Hilliard's own roller-ramp design. This assembly includes multiple flat cams, cylindrical rollers, roll cage and outer race – all precision-machined to strict tolerances.

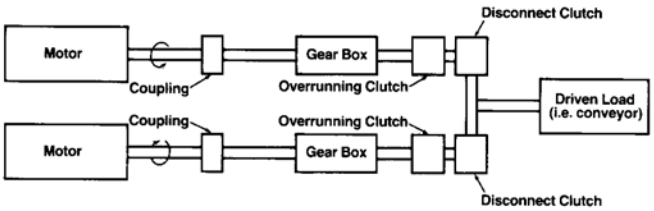
There is virtually no wear during freewheeling operations because the rollers are free to rotate between the outer race and the inner cam. Our precision-machined roller-ramp assembly assures even contact over the entire length of the rollers for improved load distribution. The result is superior reliability and long service life.



Complicated gearing mechanisms simplified.



With Hilliard Bi-Directional Overrunning Clutch.



Without Hilliard Bi-Directional Overrunning Clutch.

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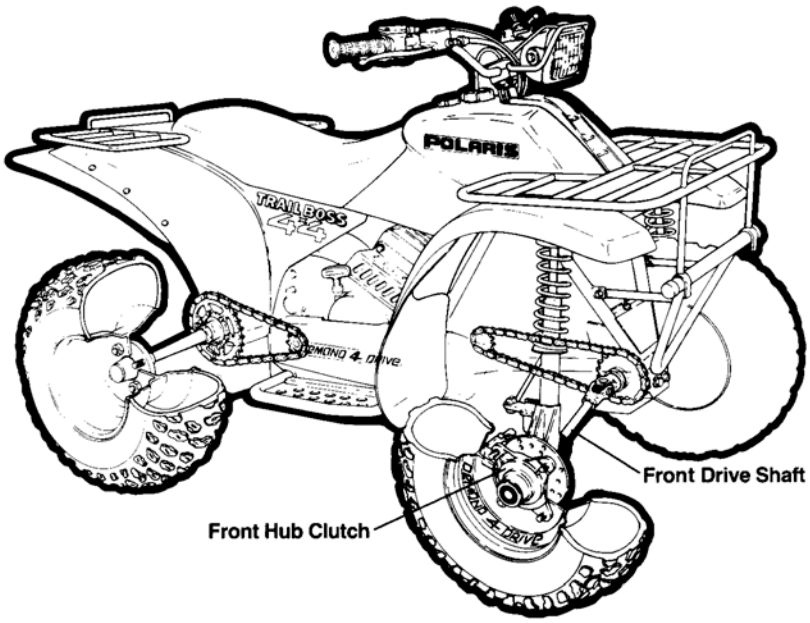
Custom-engineered designs.

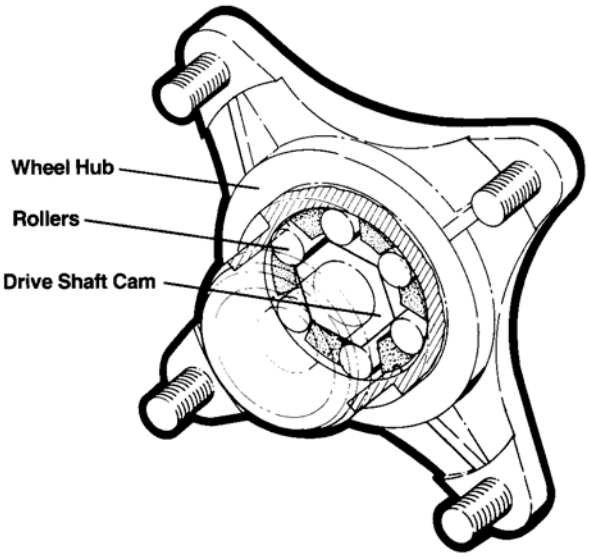
At The Hilliard Corporation, we've built our reputation of quality by listening to customers' needs and then responding with cost-effective, precision-designed products. That tradition is carried through today with our new bi-directional overrunning clutches.

We will strive to design a clutch to meet any need you might have just as we did for Polaris Industries. Working with their engineers, we developed a clutch that would allow them to do what no other manufacturer has done: produce an all-terrain vehicle with four-wheel drive on demand automatically.

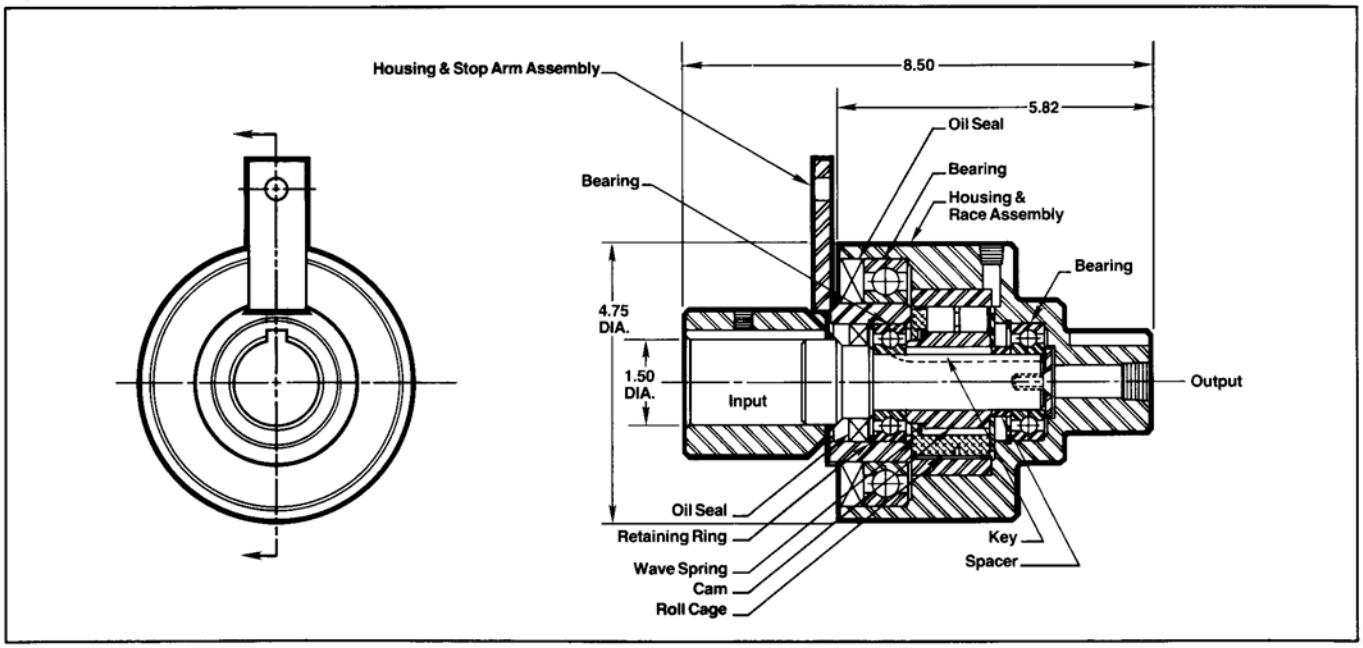
Bring us your motion control problem and together we will develop the solution.



Front Hub Clutch - Engaged Position



Typical dimensions for a unit with a torque rating of 205 lb.-ft. and with a service factor of 1.*



*Other units with different torque ratings, mounting arrangement, shaft size, etc. can be furnished upon request.

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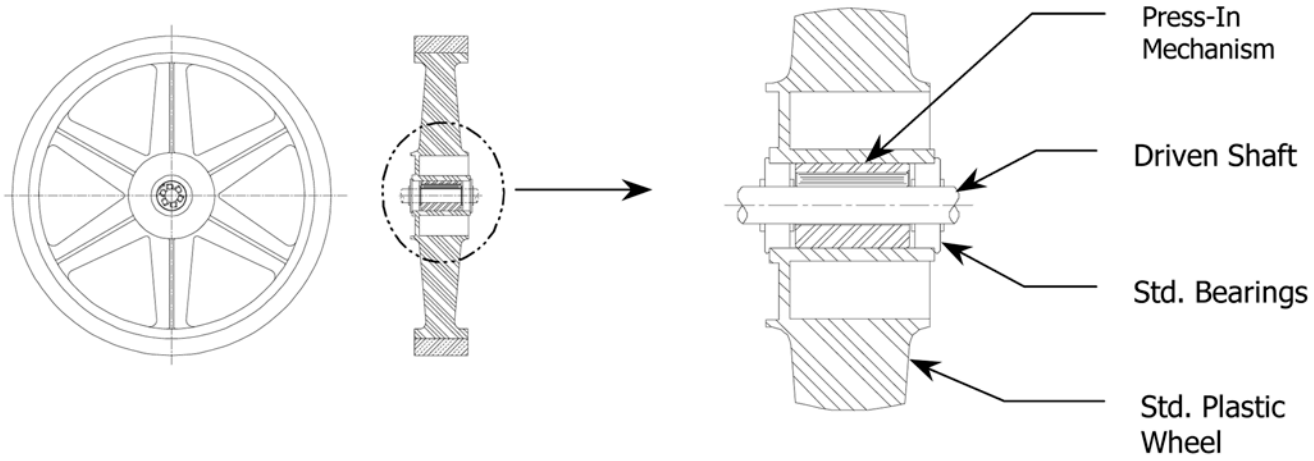
Press-In Wheel Clutch Mechanism for Self-Propelled "Walk Behind" Equipment

Hilliard's new Press-in Wheel Clutch Mechanism* allows a simple low-cost method to have positive two-wheel drive and easy steering for your self-propelled lawn and garden equipment.



What makes this design so simple?

Simply press the Hilliard mechanism into standard plastic wheels, replace the standard flanged bearings supplied with the wheel, slide the wheel back onto the driven shaft and away you go!

Operating Features

When equipment is traveling straight, both wheels drive providing better traction than one wheel, even in slippery conditions.
When turning, the outside wheel will smoothly and automatically overrun the inner wheel, allowing the equipment to be turned without fighting the other wheel.

Advantages

- Low-cost method to having positive two-wheel drive and easier steering ability
- Ease of steering -- will not tear up turf as outer wheel smoothly overruns when turning
- Lowers wear on tires compared to equipment which has both wheels fixed to a solid shaft
- Easily integrates into standard plastic wheels and operates on standard shafting
- Instant clutch engagement; will not jerk or hesitate at start
- No expensive cross-drilled holes or keyways need to be added
- No additional welding or bolting required
- Smooth, silent operation
- Simple design for easier maintenance

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*Patent Pending

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This new one-way clutch mechanism can be easily installed into your wheel to simplify your drive system. The mechanism is available in the configuration shown in the chart below.

Hilliard Model Number	Mechanism Outside Diameter (in.)	Nominal Shaft Diameter (in.)	Nominal Mechanism Length (in.)	Torque Capacity (LB-FT)
MTWC-1/2	1-1/8	1/2	1-1/2	28

Call Hilliard to inquire about other shaft diameters, wheel bores, and overall lengths (including metric) to fit your specific needs. Or, just fax the completed form provided below to 607-732-8979.

Design Information:

Torque required for your application _____

Wheel inside diameter _____

Shaft diameter with tolerances _____

Overall maximum length of mechanism _____

Shaft hardness _____

Service life (in hours) expected _____

Annual quantity needed _____

The Hilliard Corporation reserves the right to change specifications and dimensions at any time. Please contact the factory for the most current information.

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