

# Overrunning Clutch Designs

## Ramp & Roller Overrunning Clutches

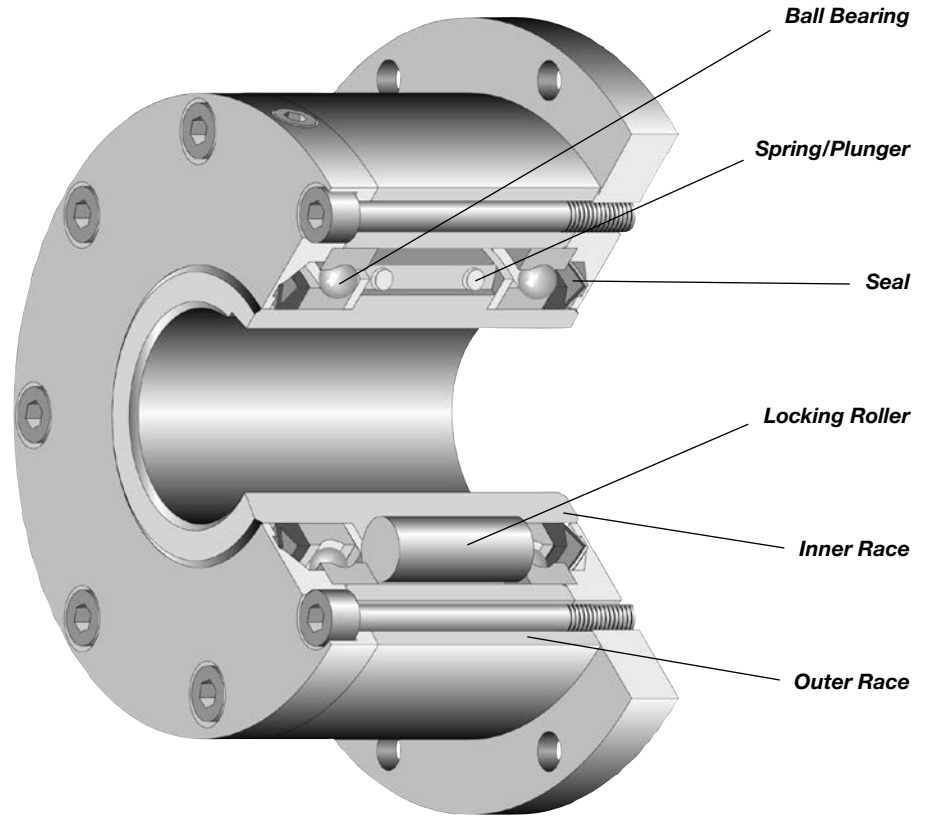
### Two Design Styles

Stieber overrunning clutches are available in two basic designs:

- Ramp & Roller
- Sprag

Overrunning clutch speed is a major determining factor in selecting the design best suited for each application. Ramp & roller clutches are used for applications with low-to-medium overrunning speeds and for indexing. Sprag clutches are the choice for applications with high overrunning speeds and for backstopping.

With each basic design there are several variations to choose from to meet specific application requirements. These variations include clutches with or without internal bearings, as well as a range of mounting flanges, covers and couplings.



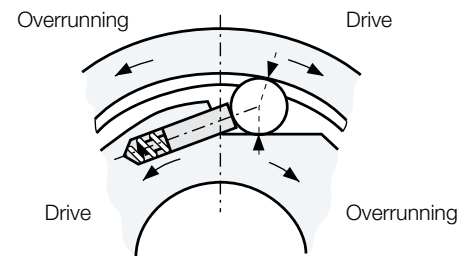
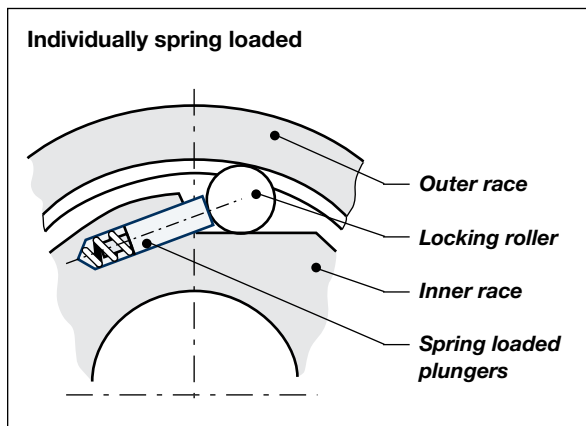
### Ramp & Roller Design

These rugged, reliable clutches consist of a cylindrical outer race and an inner race incorporating the ramps on which the rollers ride. The rollers are individually spring loaded to provide constant force between the rollers and both races.

This force ensures instantaneous lock-ups when switching from the overrunning mode to the driving mode.

This design is also quite versatile, as the clutch can be operated in all three modes: overrunning, indexing and backstopping. The outer race has greater overrunning speed capability than the inner race, making the unit ideal for use as an indexing clutch, with the outer race acting as the reciprocating member.

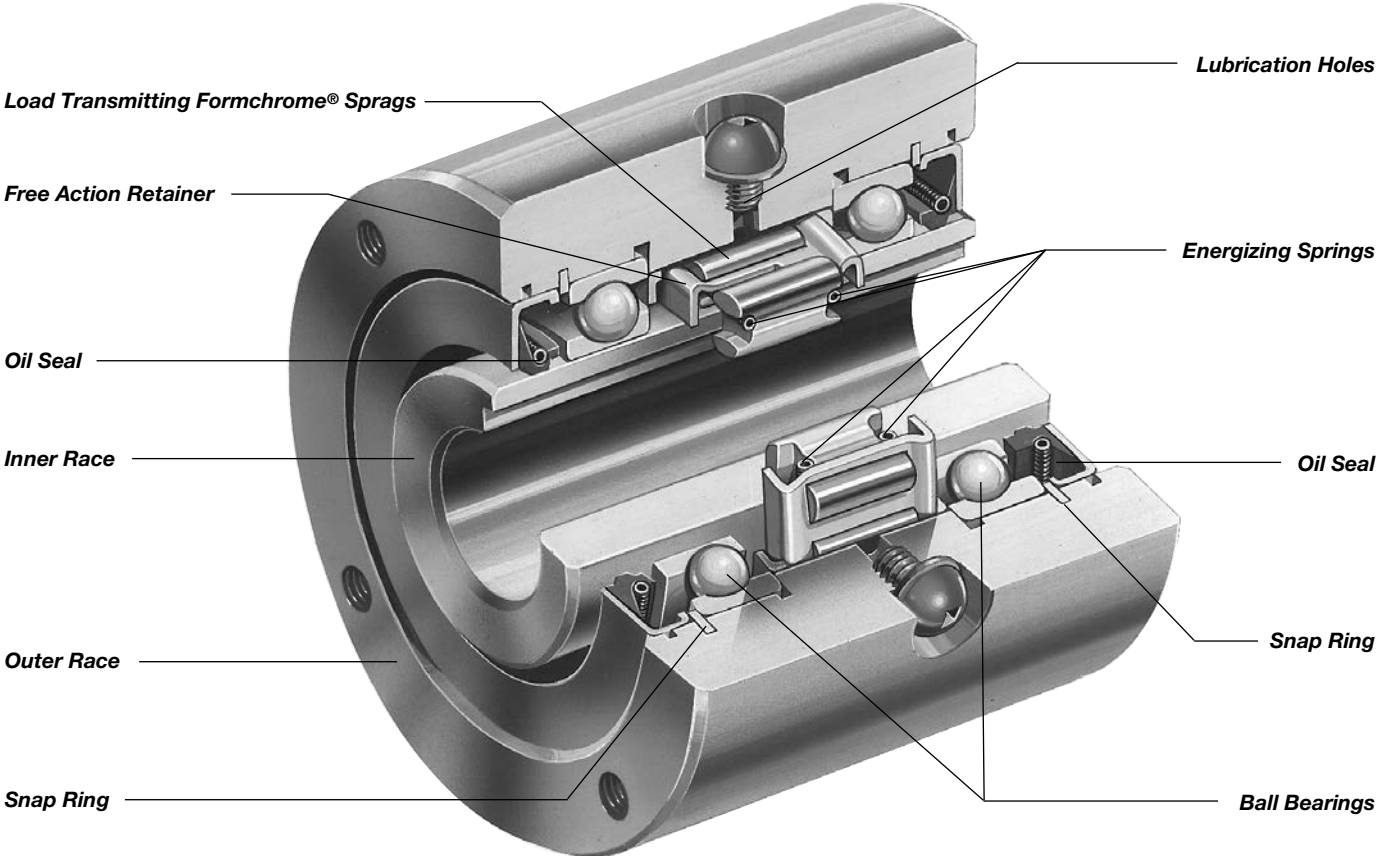
For increased accuracy in indexing applications, specify "V" type, with stronger energizing springs.



When the outer race is the driving member, this is the resultant race activity.

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## Sprag Overrunning Clutches



### Sprag Design

A sprag overrunning clutch consists of a cylindrical inner race and a cylindrical outer race surrounding it, with an annular space between the two races. A full complement of accurately formed sprags fills this annular space. Each sprag is essentially a strut placed between the races in such a way that it transmits power from one race to the other by a wedging action when either race is rotated in the driving direction. Rotation in the other direction disengages the sprags

and the clutch is free, or overruns. Either race may be the driven member or driving member.

If one race of the overrunning clutch is securely fixed to a grounded member, so that it cannot rotate, and the other race is free to turn, the free race will turn freely in one direction of rotation, but will be locked to the ground in the opposite direction.

In an overrunning clutch, the specific

sprag shapes have been developed to meet most conceivable types of clutch applications. Since different types of overrunning applications involve different loading characteristics, different sprag shapes are used to provide the greatest possible life, torque capacity, and functional characteristics for the three basic types of overrunning clutch applications: overrunning, indexing, and backstopping.

### Various Sprag Designs

