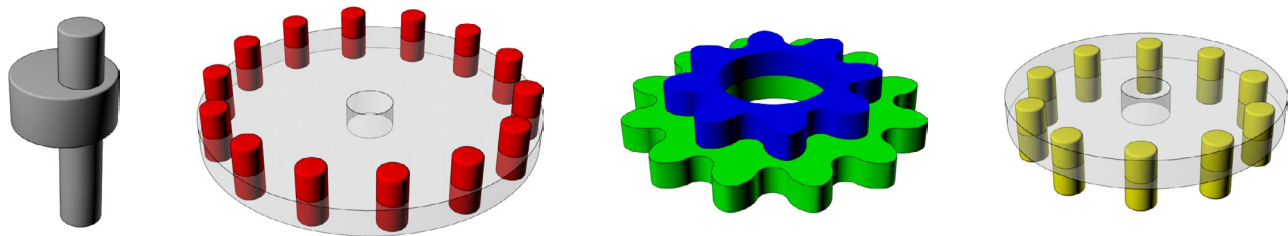


Dual Stage Hypocycloid Reducers 101

DSHR assemblies comprise five elements:

- Eccentric Cam
- Stage 1 Pins
- Stage 1 Lobes
- Stage 2 Lobes
- Stage 2 Pins



The following attributes apply to a DSHR assembly:

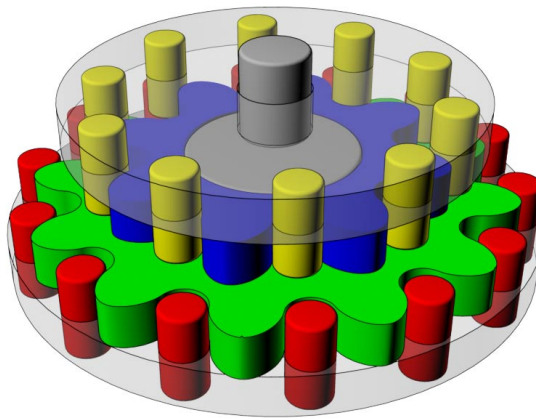
Stage 1 Pins must be fixed.

Center to center distances between the pin array diameters and lobe diameters of each stage must be equal.

Stage 1 Lobes must be rigidly attached to Stage 2 Lobes.

The difference between lobes and pins in each stage must be the same: $P1 - L1 = P2 - L2$

Stage 2 Pins must be axially constrained.



Using the Eccentric Cam as the input and the Stage 2 Pins as the output, the reduction ratio is defined by:

$$\frac{L1 * P2}{(P2 - L2) * (L1 - L2)}$$

The above reducer provides a 15:1 ratio: $(12 * 10) / ((10 - 8) * (12 - 8))$

Pin Jump is the number of pins a lobe skips over with each revolution of the Eccentric Cam. Pin Jump is defined by:

$$P1 - L1 \text{ or } P2 - L2$$

The above reducer provides a Pin Jump of 2: $14 - 12$ or $10 - 8$

As Pin Jump increases:

Cam eccentricity increases.

The difference between pin array diameters and lobe diameters increases.