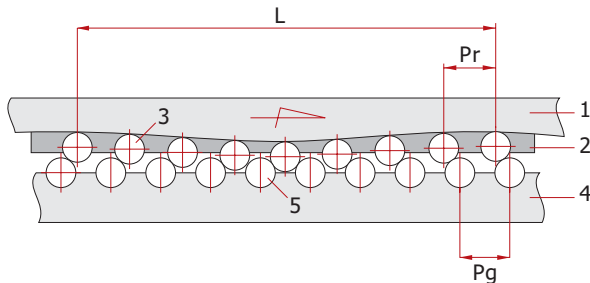
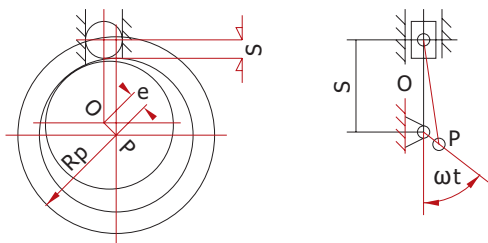


### ● ABOUT ROLADRIVE® THEORY

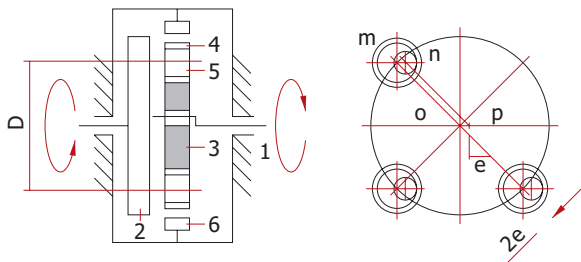
▼ Fig.1 . Extended



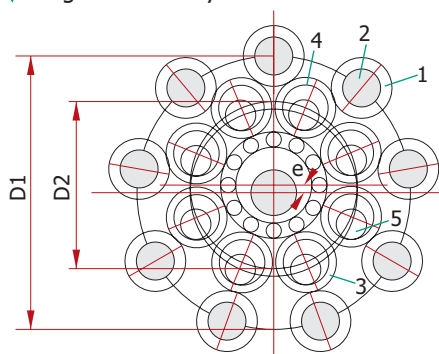
▼ Fig.2 . Exciting wave



▼ Fig.3 . Exporting



▼ Fig.4 . Assembly



#### Extended

Pressing down the roller (3) in the roller disc (2) with insert the roller (5) in the gear rack (4) and shifting on right, detail (as shown fig. 1), then the roller (3) in the roller disc (2) are shifted inverse, the roller (3) are limited in the roller disc (2) and keep always the constant gear pitch  $P_r$ , the rolling gear are shifted continuous by pushing, one by one, not any dwell point and satisfy

$L = T_g \times P_g = T_r \times P_r$ .  $T_r$  &  $T_g$  express the number of the roller in the roller disc (2) and needle (5), separately.

#### Exciting wave

The needles (5) adopting the circle's shape, and the wave exciter of the standard eccentric cam, its rule is a motion of the crank slide, (as shown fig.2).

$$S = R_p \cos \beta - e \cos \omega t$$

$$S^2 = \sqrt{R_p^2 - e^2 \sin^2 \omega t - e \cos \omega t - R_o}$$

$R_p$  - The theoretical outline radius of the eccentric cam.

$R_o$  - Basic circle radius of the wave exciter.

$e$  - Eccentric pitch.

$\omega$  - Angle speed of the eccentric cam.

$\beta$  - Angle between the connecting rod and the center line of the guide rail.

$t$  - Time constant.

#### Exporting

The roller disc (3) are excited by the eccentric cam (1), producing the high speed public revolution and the low speed retarding revolution itself on the same time. Retarding speed exported through the shaft pin (5) which are driven by the roller (4), we can easily prove to the  $mnp$  is a parallelogram, so that the exporting revolution speed equal to the speed of the roller disc (3). (as shown fig.3).

#### Assembly

The above elements are assembled (as shown fig. 4), when the roller (4) are small so that can't insert any the shaft pin (5) in it, then the shaft pin (5) put in the disc (3) directly, not any change for the exporting speed, which is a pure rolling contact in this system, a few lose and huge efficiency.

1 - Needle Sleeve

2 - Needle

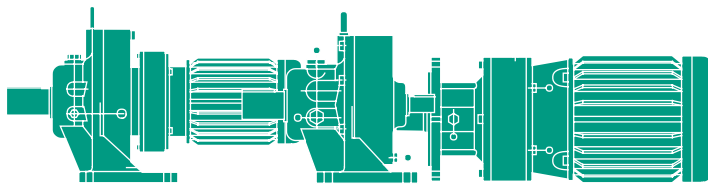
3 - Rolling Disc

4 - Rolling Gear

5 - Shaft Pin

D1 - Pitch diameter of needle.

D2 - Diameter of the wave exciter.



### ● ABOUT ROLADRIVE® FEATURES

#### COMPACT SIZE

Robust construction and several ring-gears engagement make the considerably lighter and more compact ROLADRIVE reducer. The brainchild compact motor downsize 50%~60% than conventional reducers.

#### HIGH EFFICIENCY

External and internal ring gears are around able units contact by rolling when engage. It reduces sliding friction loss when engage and obtains especially high efficiency. 90% efficiency ratio is obtained in single reduction while 80% in double reduction.

#### HIGH PRECISION

External and internal ring gears are simple pillars like roller pins that are easy to adjust and modify for proper size in order to obtain better precision and stability. Several ring-gears engage compensates ring gear tolerance. ROLADRIVE is excellent for instant positioning and preventing output back-lash. ROLADRIVE reducer is the best choice of precise position.

#### HIGH REDUCTION RATIO

ROLADRIVE reducer offers 1/6~1/87 reduction ratio in single reduction and 7569:1 in double reduction.

#### LOW NOISE

External and internal ring gears are around able units. The rolling contact makes lower noise than sliding tooth contact in conventional way. Rollers can be ground to improve its working accuracy. The external rollers of the disc engage progressively with the rollers of the fixed ring gear housing and obtains exceptional smooth and lower noise.

#### LONG LIFE

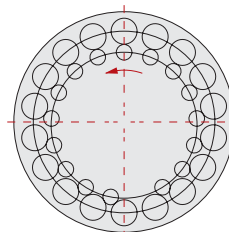
Rolling contact and even load distribution, component wear of ROLADRIVE reducer is very low. All gears are hardened, tempered and ground to obtain smooth surface and hardness HRC60±X. It turns smoothly even for long time operation and under minimum maintenance. For the economic standpoint, the long service life of ROLADRIVE reducer is an extremely profitable investment.

#### HIGH PEAK LOADING

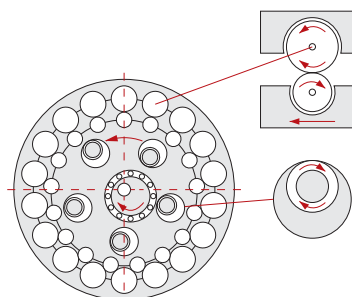
Only one or two teeth engagement in conventional transmission that is easy to break by shock loading. Power decentralization technology of ROLADRIVE reducer with many simultaneous contact points (shock loads are distributed to 20%~46% in two disc system) increases high power transmission in compact size. ROLADRIVE reducer is the first choice for high peak loading.

#### HIGH RESPONSE

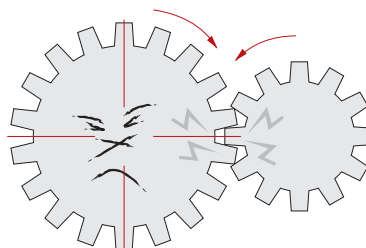
ROLADRIVE reducer equips with a pair of non-conjugate round tooth from, With proper parameter selection and design, the instant transmission ratio and speed are varied within smaller range. Several ring-gears engage compensates tolerance and resists shock, especially high response in starts-stops-changes of direction of rotation. ROLADRIVE reducer is the only choice for frequent start-stop-reversing duties.



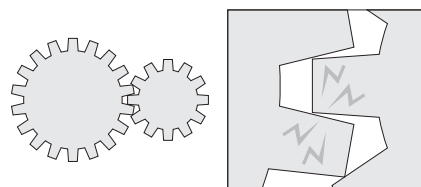
▲ Power decentralization technology is obtained by several ring-gears engagement, the shock loads capacity increases to 500% of the rated torque.



▲ Transmission efficiency is especially high for external & internal ring gears are contacting by complete rolling while sliding.



▲ In comparison with conventional spur-gear or helix-gear reducers, with which at most one to two gearwheel pairs are engaged.



▲ The device worn out or gear interference on the convention gear reducers, could possible to cause non-smooth torque transmission.