

# ARCHIMEDES DRIVE

THE HUMANOID REVOLUTION ENABLER



# ARCHIMEDES DRIVE

## HUMANOID ROBOTS, THE NEXT GENERATION ROBOTICS

Experience unparalleled precision, reliability, and silent operation with the revolutionary Archimedes Drive technology. This unique gear-free drive eliminates backlash and minimizes lost motion, delivering exceptional accuracy and fluid movements. The Archimedes Drive's innovative design reduces operational noise while enhancing precision and controllability. With its high efficiency and durability, the Archimedes Drive sets a new standard for drive systems in humanoid robots.

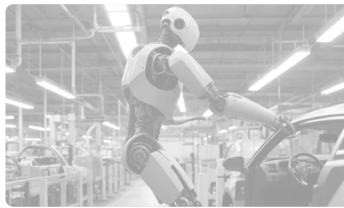
### DISCOVER THE ARCHIMEDES DRIVE



### TECHNOLOGY EXPLAINER



**PICKING AND PACKAGING**



**ASSEMBLY LINES**



**LOADING AND UNLOADING**



**HUMAN-ROBOT INTERACTION**



**UNPREDICTABLE SITUATIONS**



**HARSH ENVIRONMENTS**

## HIGH STIFFNESS

Achieves up to 70 Nm/arcmin, resulting in only 0.2 arcmin of lost motion with zero backlash.

## OPTIMIZED DESIGN

Overtorque protection enables design optimization for nominal torque rather than emergency stop torque.

## TRUE ZERO BACKLASH

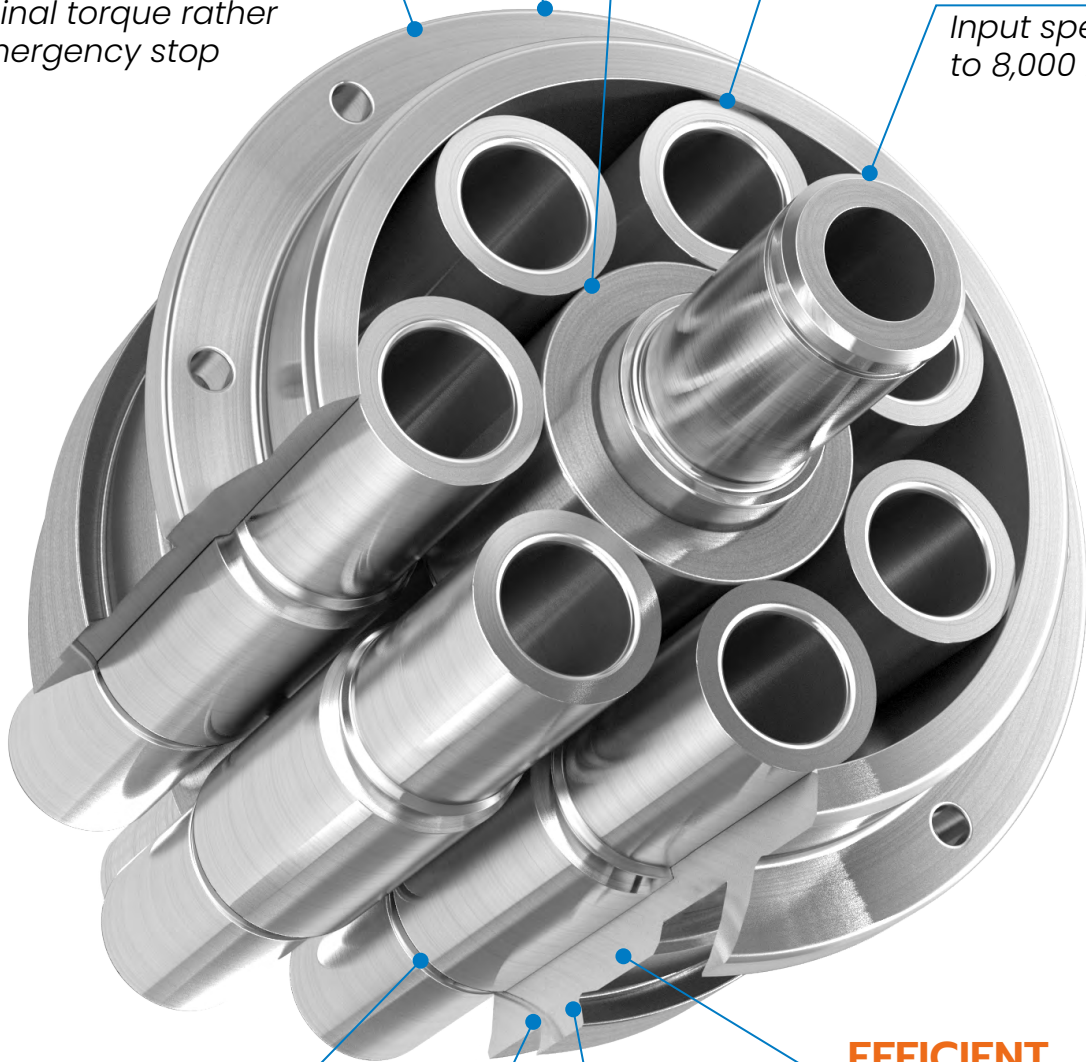
Continuous contact inherently ensures true zero backlash.

## QUIET

Operates at a noise level of less than 50 dB(A).

## FAST

Input speeds up to 8,000 rpm.



## TAILORED RATIO

Between 25:1 and 200:1.

## BACKDRIVABLE

Easily backdrivable due to low internal friction.

## EFFICIENT

Achieves up to 90% efficiency.

## OVERTORQUE PROTECTION

No fatal damage or reduction in lifespan when subjected to shock loading or overtorque.

# ARCHIMEDES DRIVE

## SYNOVIAL-SERIES

SYNOVIAL-75

SYNOVIAL-CUSTOM

Repeatable Torque	75Nm	1 - 250Nm
Reduction Ratio	30:1	25:1 - 200:1
Output Rotation	continuous	continuous



## COMPONENT SET

COMPONENT SET

Repeatable Torque	1 - 500Nm
Reduction Ratio	25:1 - 200:1
Output Rotation	continuous



## EPSILON-SERIES

EPSILON-250

EPSILON-CUSTOM

Repeatable Torque	250Nm	1 - 500Nm
Reduction Ratio	100:1	25:1 - 200:1
Output Rotation	continuous	continuous



## DELTA-SERIES

DELTA-15

DELTA-250

Repeatable Torque	15Nm	250Nm
Reduction Ratio	25:1	35:1
Output Rotation	270°	270°



## CUSTOM DESIGN

*Upon request*

# UNMATCHED PERFORMANCE



## SAFE

### 32X LESS INTENSE NOISE

*Quieter operation for enhanced comfort and safety.*

### LOW FREQUENCY

*Operates on a low-frequency noise range.*

### BACKDRIVABLE

*Ensures safe operation in the event of collisions.*

### OVERTORQUE PROTECTION

*Resilient against shock loads, vibrations and collisions.*



## PRECISE

### TRUE ZERO BACKLASH

*For precise, accurate, and smooth movements.*

### TRANSPARENCY

*For advanced, repeatable and seamless controllability.*



## ROBUST

### 20X STIFFER DESIGN

*Enhances reliable and accurate movements.*

### JOINT STRENGTH

*Ability to operate in unpredictable environments.*



## DURABLE

### 90% EFFICIENCY

*Less energy lost in heat and vibrations.*

### ROLLING CONTACT

*Smooth traction rollers reducing wear and tear.*

# SPECIFICATIONS

Unit

DELTA-SERIES

EPSILON-SERIES

SYNOVIAL-SERIES

COMPONENT SET

Repeated Torque	Nm	15-250	1-500	1-250	1-500
Nominal Torque	Nm	8-125	0.5-250	35	0.5-250
Slip Torque	Nm	18-280	1.5-600	88	1.5-600
Backlash	arcmin	0	<0.8	0	0
Max. Lost Motion	arcmin	0.2	0.8	0.2	0.2
Torsional Stiffness	Nm/arcmin	11-70	5-200	70	5-200
Max. Input Speed	rpm	>8,000	>8,000	>8,000	>8,000
Average Input Speed	rpm	4,000	4,000	4,000	4,000
Efficiency	%	up to 90	up to 90	up to 90	up to 90
Reduction Ratio	{-}	25:1-35:1	25:1-200:1	25:1-200:1	25:1-200:1
Noise Level	dBA	<50	<50	<50	<50
Output Rotation	deg.	270	continuous	continuous	continuous
Diameter	mm	72-120	tailored	70	tailored
Length	mm	60-180	tailored	90	tailored
Weight	kg	1-10	tailored	1.1	tailored
Ambiant Temperature	°C	-20 to 60	-20 to 60	-20 to 60	-20 to 60
Back Drive	Y/N	Yes	Yes	Yes	Yes
Hollow Shaft	Y/N	No	Yes	Yes	Yes
Lubrication	Cycles	For life	For life	For life	For life
Service Life	Hours	>20,000	>20,000	>20,000	>20,000

## GET IN TOUCH

**Thibaud Verschoor**  
Co-Founder | Head of Product

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VP Sales

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