











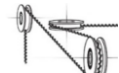



# Product lineup

## Specifications and Comparison of properties

Legend : 5=Highest, 1=Lowest applicability

Category	Item	Type	Specification(Trial)		1to1 Torque response	High-speed rotation	Push/Pull	Compression	Flexibility	Feature
			OD(mm)	ID(mm)						
Hollow cable	Torque coil	 3layer 2layer flat auger*	0.36-6.00 0.30-5.17 - -	0.18-3.20 0.15-3.20 - -	5	5	3	2	4	bi-directional (3 layers) or unidirectional (2 layers) rotation *Archimedes screw with spiral wire
	Torque Hypotube		0.20-1.10	0.10-0.70	5	2	5	5	1	high breaking strength and elongation resistance
	ACT ONE	 standard flat ultra thin auger*	0.21-4.52 0.21-4.52 0.42-3.75 -	0.13-3.20 0.16-3.20 0.34-3.20 -	4	3	4	3	3	well balanced properties *Archimedes screw with spiral wire
	Wire coil	 round flat	0.10-3.50 0.10-5.90	~1.80 0.07-5.30	1	1	2	4	5	high flexibility and compression resistance
Cable	Drive Cable	 2-6layer	0.41-6.00	-	5	5	5	4	2	Optimized for high speed rotation and power transmission
	Torque rope	 1x3,1x7, 1x12,1x19	0.30-3.00	-	4	3	5	4	3	1:1 torque transmission at hand-speed rotation
	Wire rope	 1x7,1x19 7x7,7x19 7x7x7, etc.	0.09-3.00	-	1	1	5	4	3	High breaking strength and elongation resistance
Coating	Outer coating	 Extrusion Dip coat Spray	Floropolymer Nylon, etc.	To add lubricity, ablation resistance or biocompatible sealing to cable						
	Inner tube		Floropolymer	Inner coating applied to a hollow cable						
	Precoating		PTFE	Coating for both inner and outer of hollow cable without losing the property of the cable						
Assembly	Machining & Assembly	 Laser welding, Grinding Tube assembly	Variety of welding and machining available for assembly or additional mechanical property							
	End termination	 Ball, Eye, Loop, etc.	For the end of a cable or used for intermediate attaching.							
Power transmission	Synchromesh wire rope	 AWS40 -AWS120	1.10-3.40	-	Synchronous round belt, ideal for linear-motion system drawn in 3-dimensional.					
	Cable rack	 CL0.8S / H	W3.0 x H3.6	-	With stainless cable core, ideal when the Rack needs to be flexible and high-force movement required.					

# ACT ONE®



ACT ONE cable tubes possess a high maximum torque and high torque transmission compared to polymer braided tubes. They also feature higher kink resistance and flexibility compared to hypo tubes. ACT ONE cable tubes are applied to a wide variety of minimally invasive and interventional devices within Cardiology, Peripheral, Neurology, Oncology, Orthopedics, and Endoscopy.

## Specifications

Type		1to1 Torque Response	Pushability	Flexibility	OD	ID	Filar*	Length
Standard		5	3	5	0.27-2.80 mm (Trial : 0.21-4.52)	0.16-2.10 mm (Trial : 0.13-3.20)	6-18	up to 3000mm
Flat		4	3	4	0.66-1.57 mm (Trial : 0.21-4.52)	0.44-1.27 mm (Trial : 0.16-3.20)	8-18	up to 3000mm
Swage		4	5	2	0.71-2.46 mm (Trial : 0.39-3.83)	0.45-1.81 mm (Trial : 0.21-3.10)	7-18	up to 3000mm
Ultra Thin		1	1	5	0.50-3.03 mm (Trial : 0.42-3.75)	0.13-2.75 mm (Trial : 0.34-3.20)	2-12	up to 3000mm
Auger		2	3	5	Above ACT ONE with spiral wire, used as Archimedes screw (Japan Patent number : 5408809)			

\*By changing the number of filars, the flexibility of ACT ONE can be customized.

"ACT ONE" is registered trademarks of ASAHI INTECC CO., LTD.






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# Torque coil



The torque coil is a highly flexible coil consisting of multiple layers with very fine wires, which makes the coil ideal for high-speed rotation in very tortuous routings or anatomies. Typical applications are for IVUS, OCT catheter or atherectomy device.

## Specifications

Type	Rotation direction	High speed rotation	Flexibility	Elongation resistance	OD	ID	Filar	Length
2 layer* 		5	5	3	0.44-1.68 mm (Trial : 0.30-5.17)	0.18-1.10 mm (Trial : 0.15-3.20)	4-18	up to 3000mm
3 layer* 		5	5	3	0.36-2.76 mm (Trial : 0.36-6.00)	0.18-1.71 mm (Trial : 0.18-3.20)	4-18	up to 3000mm
Auger 		-	-	-	Above torque coil with spiral wire, used as Archimedes screw (Japan Patent number : 5408809)			

\*Round and flat type is available for its fine wires. Round is suitable for application that require High speed rotation, flat is for Elongation resistance.

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# 1 to 1 Torque Hypotube




Asahi's Hypotube incorporates two core technologies – wire drawing and torque transmission augmentation. Ideal for a medical application that requires excellent compression resistance, kink resistance, shape recovery characteristics, and remarkable 1 to 1 torque characteristics.

Typical applications are endoscopic fine-needle aspiration (FNA) and other minimally invasive devices used in diagnostic and therapeutic interventions.

## Specifications

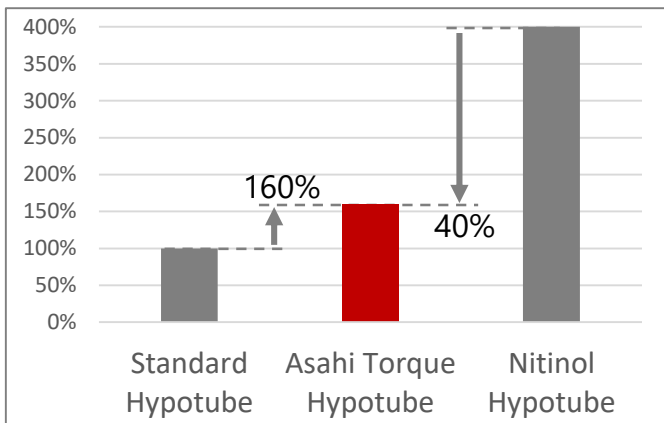
### Diameter and Length

Type		1to1 Torque response	Push/Pull	Flexibility	OD	ID	Length
Torque Hypotube		5	5	1	0.20-0.50 mm (Trial : 0.20-1.10)	0.10-0.40 mm (Trial : 0.10-0.70)	up to 3500mm

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**Comparison of mechanical property**

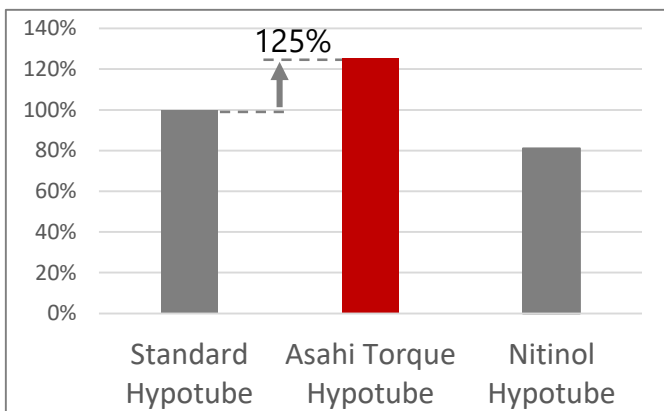
**1. Shape recovery characteristics**



Asahi's Torque Hypotube is superior to the standard one and less expensive than Nitinol. Also, it's not complicated to weld to other stainless material, makes it easy to design a catheter system combining different properties of stainless tubing.

\*Relative percentage difference of maximum curvature without bending tendency, using same size as each one.

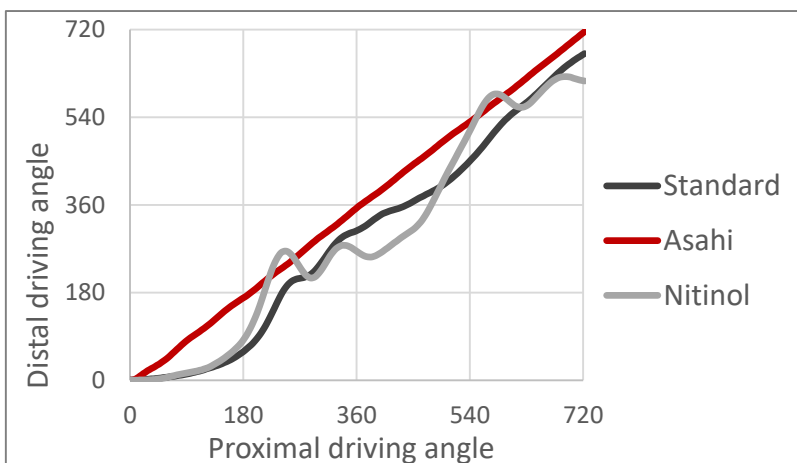
**2. Hoop strength**



Asahi's wire drawing technologies make it superior to others. Kink resistance is also better as well as Hoop strength.

\*Relative percentage difference of strength, using same size as each one.

**3. Torque response**



Excellent torsional rotation capabilities with Asahi's proprietary torque technologies to realize advanced operability.

\*Measurement in 2 loops torsion (R=50mm)

# Machining & Assembly

## Processing on surface



### Swaging process

We can decrease O. D. without both I. D. change and decrease of stiffness by beating surface of rope. It improves the anti-elongation



### Flat-grinding process

We can perform Flat-grinding on surface of rope in whole length . It improves flexibility of rope without changing I. D..



### Auger

We can set additional filar on rope. This structure adds the transportation function to rope.



### Marking process

We can put marking to make clear the its position of the wire rope.

## End treatment



### Electric discharge method

This method makes individual filars avoid being crushed by cutting with nipper.



### End treatment by laser

We can unite individual filars into one end by laser welding.



### Plasma welding

We can make hemisphere shape at the end of rope. It improves both safety and sliding performance.



### L-grinding process

We can perform high precision grinding process to make L-shaped end of rope. This shape helps to connect rope to other materials.

## Assembly



### Laser welding

We can weld different kind of materials by laser welding.



### Solder welding

We can weld different kind of materials by soldering.