

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	0.36-6.05	0.18-5.25	↑	5	3	2	4	bi-directional (3 layer) or unidirectional (2 layer) rotation *Archimedes screw with spiral wire						
		2layer	0.30-5.17	0.15-3.55												
		flat auger*	-	-												
	Torque Hypotube		0.20-1.10	0.10-0.70							2	5	5	1	high breaking strength and elongation resistance	
ACT ONE	standard	0.21-5.22	0.13-4.00	4	3	4	3	3	well balanced properties *Archimedes screw with spiral wire							
	flat ultra thin auger*	0.21-4.70	0.16-3.95													
Wire coil		round	0.10-3.50	~1.80	1	1	2	4	5	high flexibility and compression resistance						
		flat	0.10-5.90	0.07-5.30												
Cable	Drive Cable	2-6layer	0.41-6.00	-	↑	5	5	4	2	High breaking strength and elongation resistance						
		Torque rope	1x3,1x7, 1x12,1x19	0.30-3.00							-	4	3	5	4	3
		Wire rope	1x7,1x19 7x7,7x19 7x7x7, etc.	0.09-3.00							-	1	1	5	4	3
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 hollow cable						
	Precoating		PTFE							Coating for both inner and outer of hollow cable without losing 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 end of 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	W3.0xH3.6	-						With stainless cable core, ideal when the Rack need 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 : 0.21-5.22)	0.16-2.10 mm (Trial : 0.13-4.00)	6-18	up to 3000mm
Flat		4	3	4	0.66-1.57 mm (Trial : 0.21-4.70)	0.44-1.27 mm (Trial : 0.16-3.95)	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 : 0.42-3.90)	0.13-2.75 mm (Trial : 0.34-3.35)	2-12	up to 3000mm
Auger		2	3	5	Above ACT ONE with spiral wire, used as Archimedes screw			

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

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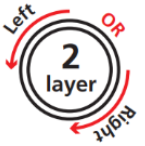



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Torque coil



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 : 0.15-3.55)	4-18	up to 3000mm
3 layer* 		5	5	3	0.36-2.76 mm (Trial : 0.36-6.05)	0.18-1.71 mm (Trial : 0.18-5.25)	4-18	up to 3000mm
Auger 		-	-	-	Above torque coil with spiral wire, used as Archimedes screw			

*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.

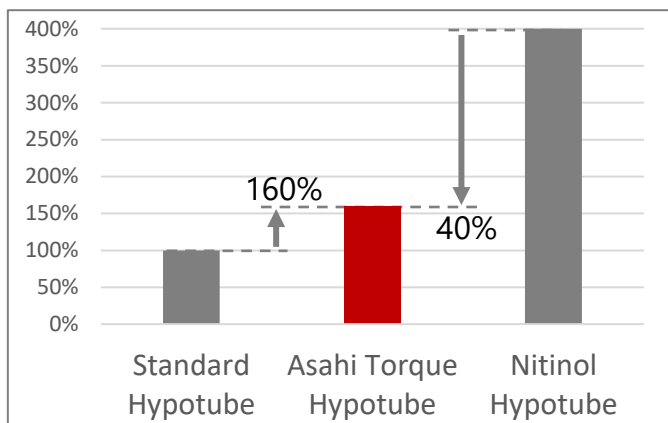
Specifications

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

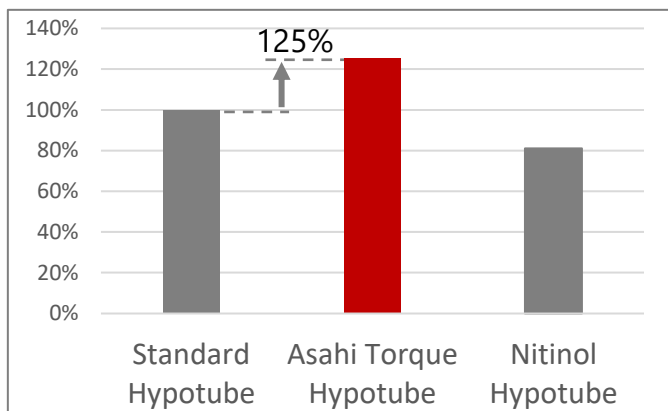
1. Shape recovery characteristics



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.

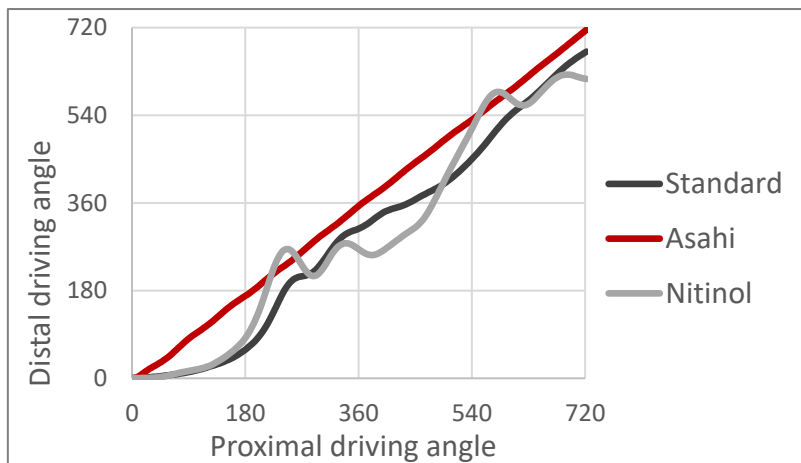
2. Hoop strength



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)

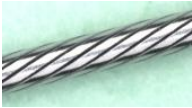
Machining & Assembly

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.