

Multicore Tube Stainless Steel Tube

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DAECHUN
Industrial Co., Ltd.

Brief history

- 1981. 10 DAECHUN INDUSTRIAL CO., LTD established
- 1997. 01 Moved to new(present) factory
- 1997. 10 Achieved 500 shipset supply
- 1998. 10 Approved ISO9002 Quality Management System
- 1999. 01 Received award as an excellent cooperated company by
Hyundai Heavy Industrial Co., Ltd
- 2000. 01 Received award best cooperated company by Daewoo
Shipbuilding & Marine Engineering Co., Ltd
- 2000. 09 Achieved 1000 shipset supply
- 2004. 05 Achieved 2000 shipset supply
- 2006. 11 Approved OHSAS 18001 Occupational Health and
Safety Management System
- 2006. 11 Approved ISO 14001 Environmental Management System by
- 2007. 01 Achieved 3000 shipset supply

Approval program

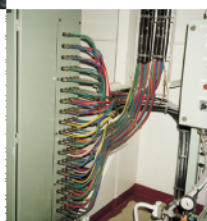


DAECHUN manufacture stainless steel tube / pipe and multicore tube for marine, offshore and industrial applications, with approvals from all Classification Societies. As a leading specialist in this field, we have so far supplied and installed the products on more than a couple of thousand newbuildings and retrofits. Providing with quality product and service, we are prepared to serve customers worldwide.



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Particulars



• **Construction**

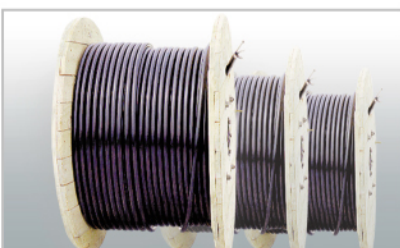
Bare tube, sheathed single tube and multicore tube material AISI 316/316L/304, CuNi, Copper O.D. 6mm-15mm, tube wall thickness 0.5mm-2.0mm, max. 10core Bond type tube for cargo area installation. Packed on wooden drum.

• **Properties**

Permissible size tolerance according to ASTM A269
Sheath material of oil and seawater resistant, flame-retardant or halogen-free.

• **For use**

- Remote control line(hydraulic)
- Level gauge line, draft gauge line
- Gas detection and sampling line
- Fire damper open/shut line, etc.



Use of multicore tube has proven extremely cost-effective and space-saving when compared to straight single tubes, requiring no intermediate joints and connections.

For easier identification and further protecting purpose, each tube is PVC sheathed in different color. Multicore tube is continuously marked at every 1M throughout entire length for easier work.

All tubing products are certified by major Classification Societies including LR, ABS, DNV, GL, BV, RINA, CCS and KR.

Accessories and tools are supplied.

Specification(Metric size)

O.D.(mm)xCore	Bundle Weight (Kg / M)						Overall diameter approx. (mm)
	Stainless steel			Copper & Copper alloy			
	Wall Thickness(mm)			Wall Thickness(mm)			
	0.5	0.8	1.0	0.8	1.0	1.2	
6 x 1	0.15	0.18	0.20	0.20	0.22	-	9
6 x 2	0.60	0.67	0.71	0.70	0.74	-	19
6 x 3	0.75	0.86	0.92	0.90	0.97	-	20
6 x 4	0.82	0.96	1.04	1.10	1.19	-	23
6 x 5	0.90	1.08	1.18	1.14	1.25	-	24
6 x 6	1.04	1.25	1.37	1.34	1.47	-	27
6 x 7	1.15	1.39	1.53	1.40	1.56	-	27
6 x 8	1.40	1.68	1.84	1.60	1.78	-	32
6 x 9	1.60	1.92	2.01	1.85	2.05	-	34
8 x 1	0.20	0.25	0.28	0.27	0.31	0.34	11
8 x 2	0.73	0.83	0.89	0.87	0.94	0.97	23
8 x 3	0.85	1.02	1.12	1.07	1.18	1.28	24
8 x 4	1.00	1.20	1.33	1.29	1.43	1.56	28
8 x 5	1.30	1.52	1.67	1.59	1.77	1.93	31
8 x 6	1.50	1.82	2.00	1.94	2.15	2.34	33
8 x 7	1.63	1.93	2.15	2.08	2.33	2.56	33
8 x 8	1.90	2.35	2.60	2.52	2.80	3.04	41
8 x 9	2.10	2.67	2.95	2.88	3.20	3.49	43
10 x 1	-	0.30	0.34	-	0.37	0.41	13
10 x 2	-	1.10	1.18	-	1.24	1.32	28
10 x 3	-	1.50	1.60	-	1.68	1.81	29
10 x 4	-	1.80	1.97	-	2.09	2.26	33
10 x 5	-	2.00	2.20	-	2.33	2.55	37
10 x 6	-	2.15	2.40	-	2.57	2.83	40
10 x 7	-	2.28	2.52	-	2.80	3.10	40
10 x 8	-	2.95	3.20	-	3.60	3.95	48
10 x 9	-	3.30	3.80	-	4.15	4.54	51
12 x 1	-	0.36	0.41	-	0.39	0.45	15
12 x 2	-	1.38	1.42	-	1.44	1.50	33
12 x 3	-	1.81	1.96	-	1.91	2.08	38
12 x 4	-	2.13	2.37	-	2.26	2.53	39
12 x 5	-	2.44	2.70	-	-	-	44
12 x 6	-	2.70	3.00	-	-	-	48

O.D.(mm)xCore	PVC sheathed tube Weight (Kg/M)						Overall diameter approx. (mm)
	Stainless steel				Copper & copper alloy		
	Wall Thickness (mm)				Wall Thickness (mm)		
	1.0	1.2	1.5	2.0	1.0	1.2	
10 x 1	0.34	0.38	0.43	0.51	0.37	0.41	13
12 x 1	0.41	0.46	0.53	0.63	0.44	0.49	15
15 x 1	0.52	0.58	0.67	-	0.56	0.63	18

Please consult us for other sizes not listed.

Specification(Imperial size)

Tube O.D.(in.)xCore	Bundle Weight (Kg / M)						Overall diameter approx. (mm)
	Stainless steel				Copper & copper alloy		
	Wall Thickness				Wall Thickness		
	0.035"	1.0mm	0.049"	1.2mm	0.035"	0.049"	
1/4" x 1	0.20	0.21	0.24	0.24	0.21	0.26	9
1/4" x 2	0.75	0.77	0.83	0.81	0.78	0.87	23
1/4" x 3	1.00	1.04	1.12	1.10	1.04	1.18	23
1/4" x 4	1.10	1.15	1.26	1.28	1.16	1.34	24
1/4" x 5	1.20	1.26	1.40	1.36	1.27	1.50	27
1/4" x 6	1.40	1.47	1.64	1.60	1.49	1.76	34
3/8" x 1	0.32	0.34	0.38	0.37	0.34	0.41	13
3/8" x 2	1.14	1.18	1.27	1.25	1.18	1.33	27
3/8" x 3	1.55	1.62	1.75	1.72	1.62	1.84	28
3/8" x 4	1.90	1.98	2.16	2.12	1.99	2.28	33
3/8" x 5	2.15	2.25	2.48	2.43	2.26	2.63	37
3/8" x 6	2.35	2.47	2.74	2.68	2.47	2.86	39
1/2" x 1	-	0.42	0.48	0.47	-	0.52	16
1/2" x 2	-	1.36	1.49	1.48	-	1.57	36
1/2" x 3	-	1.97	1.94	1.92	-	2.06	38
1/2" x 4	-	2.32	2.70	2.65	-	2.85	43

Please consult us for other sizes not listed.

Maximum allowable working pressure

Seamed Stainless Steel Tube

O.D. (mm)	Wall Thickness (mm)						O.D. (in.)	Wall Thickness (in.)	
	0.5	0.8	1.0	1.2	1.5	2.0		0.035	0.049
6	160	270	350	-	-	-	1/4	275	410
8	120	195	250	310	-	-	3/8	180	264
10	95	155	195	240	310	-	1/2	140	200
12	-	125	160	195	250	350			
15	-	-	125	155	195	-			

Copper Tube

O.D. (mm)	Wall Thickness (mm)			O.D. (in.)	Wall Thickness (in.)	
	0.8	1.0	1.2		0.035	0.049
6	120	150	180	1/4	130	180
8	85	110	130	3/8	85	110
10	-	85	100	1/2	-	85
12	-	70	85			

Cu-Ni(90/10) Tube

O.D. (mm)	Wall Thickness (mm)		
	1.0	1.4	1.5
8	150	240	260
10	130	190	200
12	-	160	170

Stainless steel tube



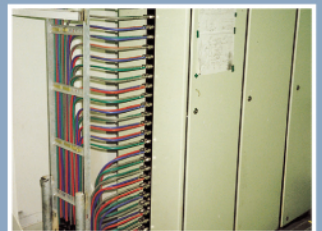
Coiled tube and straight tube

Application

High pressure and high temperature service.
Pneumatic and hydraulic line.
Anti - corrosive service.

Tube Sizes

Outer Diameter : 6mm to 12mm
Wall Thickness : 0.5mm to 2.0mm
Maximum Length : 600M Coiled / 6M Straight

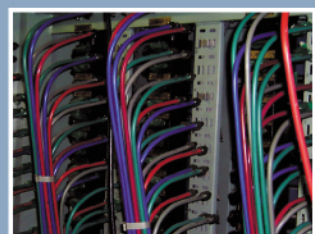
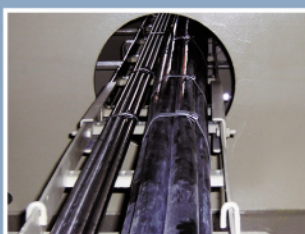
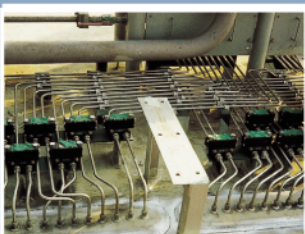
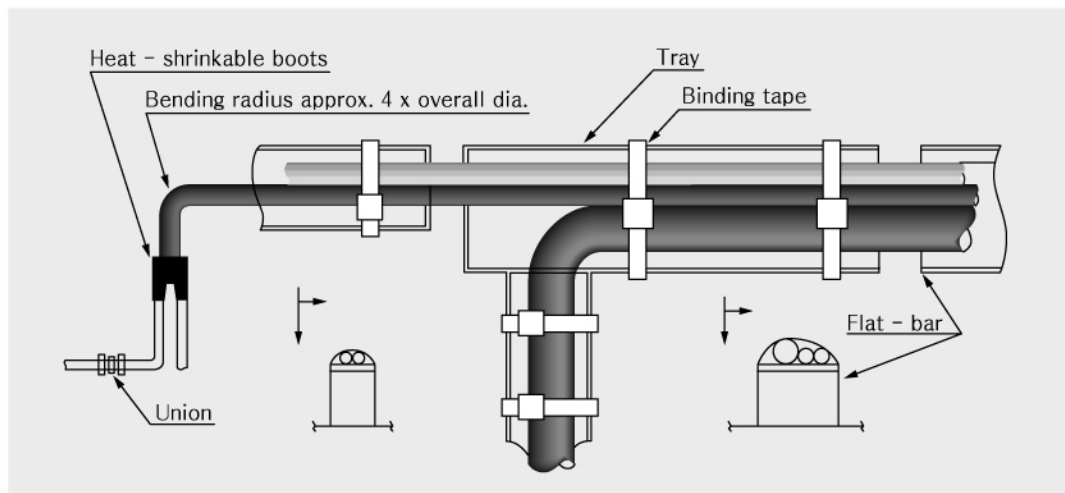


Installation

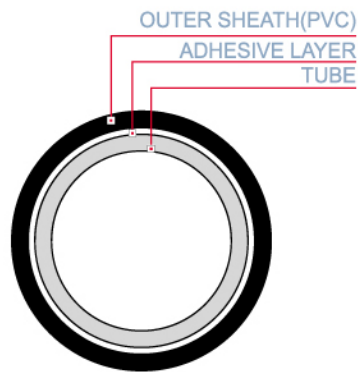


Installation of multicore tube, e.g. uncoiling from shipping drum, straightening, running, cutting, etc is done in same way as that of electrical cable. See typical installation shown below.

The multicore tube can be run on ladder tray, perforated tray, or flat - bar tray, and penetrate deck or bulkhead(wall) by either coaming or appropriate penetration fittings. Suitable fittings such as straight union, male/female connector, penetration gland, etc are used for connection or termination of the tube.



Single core bond type tube

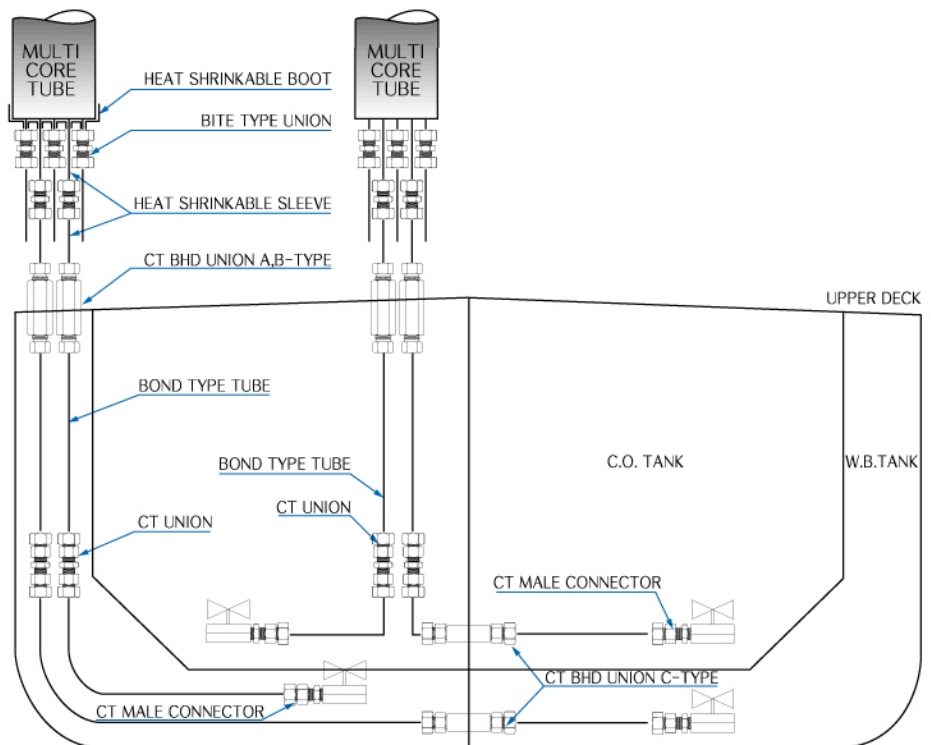


1. The bond type tube is installed in water ballast tank(WBT) and crude oil tank (COT). This tube has a special adhesive layer between tube and protective outer sheath, capable of localizing any physical damage of the tube.
2. When compared to conventional use of bare tube (typically 2mm wall), the bond type tube of 0.8~1.0mm wall is commonly adopted, which enables yard's installation easier and minimizes corrosion of tube in service.

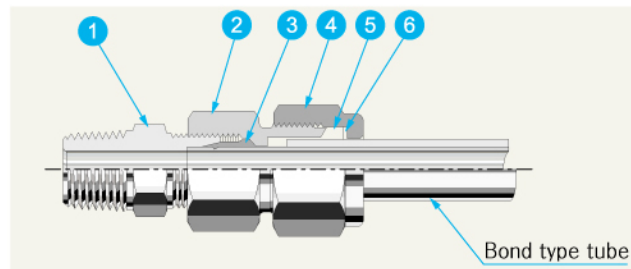
(Unit : mm)

Tube O.D.	Thickness	Overall diameter
12	0.8 / 1.0 / 1.2	15
10	0.8 / 1.0 / 1.2	13
8	0.8 / 1.0 / 1.2	11

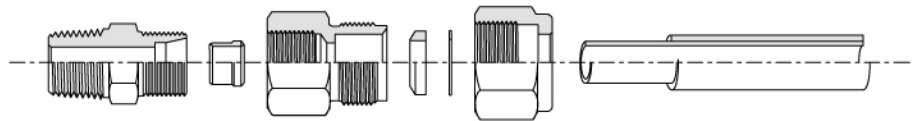
Typical Installation



Special fittings for bond type tube



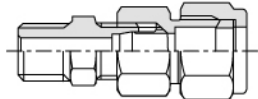
No	Part name	Material
1	Body	AISI 316
2	Coupling	AISI 316
3	Sleeve	AISI 304
4	Nut	AISI 316
5	Packing	NBR
6	Bearing	POM



The bond type tube is installed together with suitable fittings for intended connection (see below) allowing no intermediate cuts. Sealing is achieved by means of bite mechanism, NBR packing and CT nut.

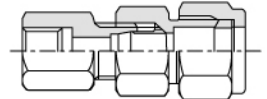
CT connector (male)

bond type tube - equipment (valve actuator)



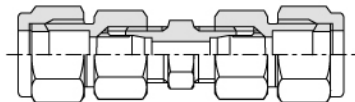
CT connector (female)

bond type tube - equipment (valve actuator)



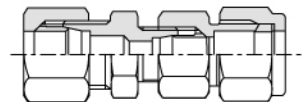
CT union

bond type tube - bond type tube



CT xB union

bond type tube - bare tube



CT bulkhead union A type

bond type tube - bond type tube
(both sides NBR compression)



CT bulkhead union B type

bond type tube - bond type tube
(1 side bite nut, 1 side NBR compression)



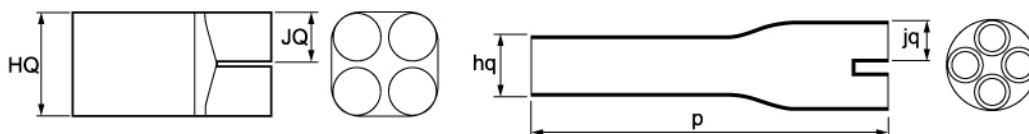
CT bulkhead union C type

bond type tube - bond type tube
(both sides bite & NBR compression)



Heat shrinkable boot

Material	Cross - linked polyolefin (flame retardant)	
Temperature	Operating Temperature range	- 55°C ~ 100°C
	Minimum shrinking temperature	135°C



Type	Expanded		Recovered (min.)			Suitable multicore tube
	HQ	JQ	hq	jq	p	
DCHB - 02 - 1	30	15	9	4.1	70	O.D. 6mm X 2CORE O.D. 8mm X 2CORE
DCHB - 02 - 2	50	21	23	7.6	119	O.D. 10mm X 2CORE O.D. 12mm X 2CORE
DCHB - 03 - 1	35	15	17	4.6	76	O.D. 6mm X 3CORE O.D. 8mm X 3CORE
DCHB - 03 - 2	43	21	23	7.6	99	O.D. 10mm X 3CORE O.D. 12mm X 3CORE
DCHB - 04 - 1	35	15	12	3.0	95	O.D. 6mm X 4CORE O.D. 8mm X 4CORE
DCHB - 04 - 2	47	21	23	6.4	165	O.D. 10mm X 4CORE O.D. 12mm X 4CORE
DCHB - 05	60	30	24	7.5	180	O.D. 8mm X 5CORE O.D. 10mm X 5CORE O.D. 12mm X 5CORE
DCHB - 06 - 1	35	12	16	4.0	75	O.D. 6mm X 6CORE O.D. 8mm X 6CORE
DCHB - 06 - 2	61	21	37	8.9	152	O.D. 10mm X 6CORE O.D. 12mm X 6CORE

Heat shrinkable sleeve

Material	Cross - linked polyolefin (flame retardant)	
Temperature	Operating Temperature range	- 55°C ~ 100°C
	Minimum shrinking temperature	135°C



Type	D	d(min.)	w(nom.)
	Expanded	Recovered	Wall thickness Recovered after heating
DCHT 6 / 2	6	2	1.5
DCHT 12 / 4	12	4	1.5
DCHT 19 / 6	19	6	2.0
DCHT 27 / 8	27	8	2.0
DCHT 38 / 12	38	12	2.5
DCHT 50 / 18	50	18	2.5
DCHT 70 / 26	70	26	2.5

Unit conversion table

Length

	m	in	ft	yd	mile
m	1	39.37	3.281	1.0936	0.000621
in	0.0254	1	0.08333	0.02778	0.000016
ft	0.3048	12	1	0.33333	0.000189
yd	0.9144	36	3	1	0.000568
mile	1609.344	63360	5280	1760	1

Weight

	kg	ton	grain	OZ	1bm
kg	1	0.001	15432	35.273	2.20459
ton	1.000	1	1.5432E7	35273	2204.59
grain	0.00006	0.6E-7	1	0.00228	0.00014
OZ	0.02835	0.2835E-4	437.4	1	0.0625
1bm	0.045359	0.45359E-4	7000	16	1

Pressure

	kgf/mm ²	bar	Pa	atm	mH ₂ O	mHg	1bf/in ²
kgf/mm ²	1	0.980665	0.980665E	0.9678	10.000	0.7356	14.22
bar	1.0197	1	1E5	0.9869	10.197	0.7501	14.50
Pa	1.0197E-5	1E-5	1	0.9869E-5	10.197E-4	0.7501E-6	14.50E-4
atm	1.0332	1.01325	1.01325E5	1	10.33	0.760	14.70
mH ₂ O	0.10000	0.09806	9.80665E3	0.09678	1	0.07355	1.422
mHg	1.3595	1.3332	1.3332E5	1.3158	13.60	1	19.34
1bf/in ²	0.07031	0.06895	6.895E3	0.06805	0.7031	0.05171	1

Stainless steel and applications

Material Grades	Characteristics	Application
304	Typical grade of austenitic stainless steel, Known as 18-8 stainless steel, having better corrosion resistance and wider application than 430. Having good ductility and cold formability such as deep drawing bending. But severe cold deformation causes magnetism and work hardening.	Household articles, trains, chemical plants, ships, electric industry, food industry, automobile parts, interior and exterior materials for building.
316	Having good corrosion resistance in acid by adding Mo, and good creep strength at elevated temperatures.	Chemical plants, petroleum industry, paper industry, dye industry, ships, etc.
316L	Having good intergranular corrosion resistance by reducing C extremely and adding Mo. Having better corrosion resistance in welded structures than 316.	

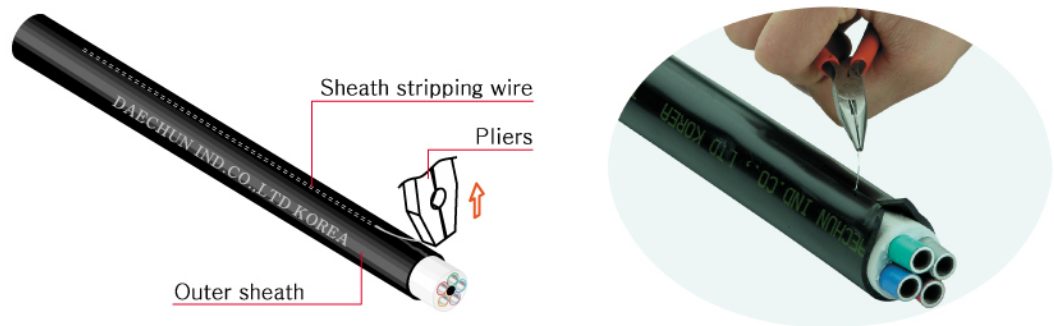
Permissible variations in dimensions

(ASTM A269)

	outside diameter (in.)	outside diameter (mm)	wall thickness (%)	cut length (mm)		Thin walled tubes
				over	under	
1	up to ½	±0.13	±15	3.2	0	Less than 1.66mm
2	½ to 1½, excl	±0.13	±10	3.2	0	Less than 2.41mm
3	1½ to 3½, excl	±0.25	±10	4.8	0	Less than 1.66mm
4	3½ to 5½, excl	±0.38	±10	4.8	0	Less than 3.81mm
5	5½ to 8½, excl	±0.76	±10	4.8	0	Less than 3.81mm

Sheath stripping wire(embedded) of multicore tube

We supply multicore tube having a stripping wire embedded along the tube(see below), which ensure easier stripping of sheath. The sheath canbe simply stripped out by pulling the wire, without using tools like knife, etc.

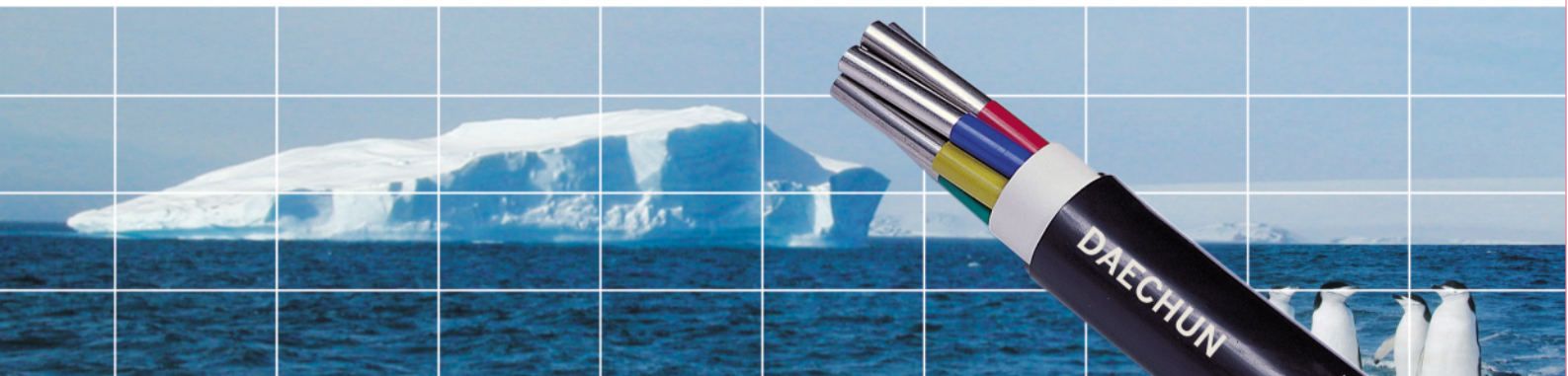


Storage of stainless steel bare tube

The stainless steel tube canbe subjected to corrosion when it is exposed to salty environments containing water and chlorides (chloride stress corrosion).

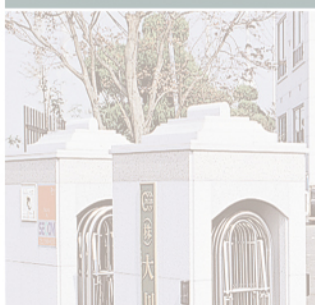
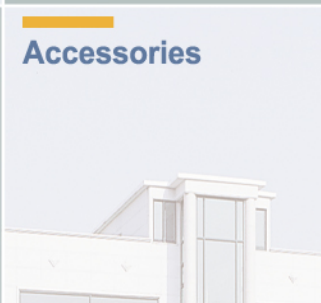
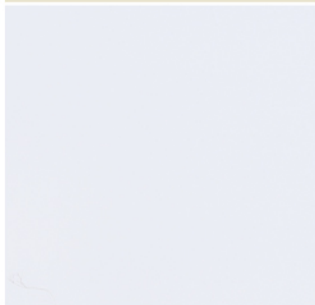
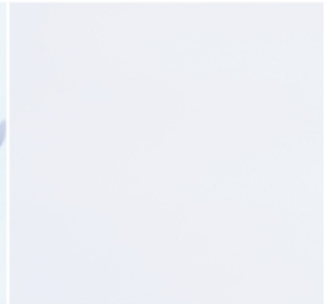
Therefore the tube shall be stored indoors(warehouse), or covered with protecting canvas, etc in case of outdoor stowage.

Multicore (sheathed) tube is supplied with end cap at both ends, and bare stainless steel tube covered with pvc sheet.



Accessories

Tools





DAECHUN
Industrial Co., Ltd.

HEAD OFFICE / FACTORY

1085, GOMO-RI, JINRYE-MYUN, KIMHAE, KYUNGNAM, KOREA 621-881

TEL. +82-55-345-2288 FAX. +82-55-345-2289

EXPORT

TEL. +82-51-622-8914 FAX. +82-51-622-8960

E-mail. sales@daechun.co.kr