



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Canadian
Coast Guard

Garde côtière
canadienne

Integrated Technical Services



Safety First, Service Always



Mooring Hardware for Aids to Navigation

Annex B

Technical Statement of Requirements

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Section 1 GENERAL

1.1 PURPOSE

- 1.1.1 This Technical Statement of Requirements (TSoR) states the requirements of the Department of Fisheries and Oceans, Canadian Coast Guard (CCG) for Mooring Hardware used to hold the position of CCG's floating aids to navigation.

1.2 DEFINITION

- 1.2.1 **Mooring Hardware** is referred herein/defined as standard links, end-links, long links, bridle rings, counterweight lifting links, shackle assembly, swivel assembly, counterweights, bridle and chain assemblies; and all combinations thereof.

1.3 APPLICABLE STANDARDS

- 1.3.1 The Contractor must perform all work in accordance with the TSoR and the standards listed in Table 1.

Table 1: Applicable Standards

Source	Document	Version
Lloyd's Register (LR)	Rules and Regulations for the Classification of Ships, Part 2: Rules for the Manufacture, Testing and Certification of Materials, referred herein as LR Rules Part 2 .	July 2020
ASTM International (ASTM)	ASTM A48/A48M – Standard Specification for Gray Iron Castings, referred herein as ASTM A48 .	2003 (Reapproved 2016)

1.4 TECHNICAL DATA SHEETS (TDS)

- 1.4.1 Mooring Hardware must be sized and formed in accordance with the relevant TDS of Appendix A.

Section 2 REQUIREMENTS FOR MOORING HARDWARE

2.1 GENERAL

- 2.1.1 Mooring Hardware must be manufactured in accordance with the requirements of this TSoR.
- 2.1.2 Mooring Hardware must be manufactured in accordance with the LR Rules Part 2 (Chapter 10, Section 2).
- 2.1.3 Mooring Hardware must be manufactured by a Lloyd's Register Approved Manufacturer of Cable and Fittings for Cable. This manufacturer must be approved for Grade U3 chain cable and fittings.

2.2 MATERIALS

- 2.2.1 All materials used in the manufacture of Mooring Hardware, except for the shackle cotter keys, must be of uniform quality Grade **U3** steel and must comply with LR Rules Part 2 (Chapter 3, Section 9; and Chapter 10, Section 2).
- 2.2.2 All shackle cotter keys (TDS 201-XX-C, 202-XX-C and 204-XX-C) must be manufactured with stainless steel meeting the requirements of American Iron and Steel Institute (AISI) standard of type 316.

2.3 DIMENSIONS AND TOLERANCES

- 2.3.1 Mooring Hardware must conform to the shapes, dimensions, and tolerances shown on the TDS (Appendix A).

2.4 MOORING HARDWARE ASSEMBLY

- 2.4.1 Mooring Hardware (TDS 200, 300, 400, 500 and 700 series) must be delivered to Canada fully assembled.

2.5 SHACKLES (TDS 200 SERIES)

- 2.5.1 Each shackle must not be made with a welded pin construction.

2.6 SWIVELS (TDS 300 SERIES)

- 2.6.1 Swivels must be formed by upset forging, and welding a solid sleeve onto the swivel pin.
- 2.6.2 The welded swivel design and fabrication process must conform to the LR Rules Part 2.
- 2.6.3 Each swivel must rotate freely.
- 2.6.4 Each swivel must not be made using a threading nor a pinning manufacturing process.

2.7 LIFTING LINK (TDS 105) AND COUNTERWEIGHTS (TDS 701)

- 2.7.1 The Lifting Link must be cast into the counterweight body so that the body and Lifting Link form a single unit.
- 2.7.2 Welding of the Lifting Link must be done in accordance with LR Rules Part 2.

MOORING HARDWARE FOR AIDS TO NAVIGATION – TECHNICAL STATEMENT OF REQUIREMENTS
Requirements for Mooring Hardware

- 2.7.3 Each Counterweight body must be made from one uniform, continuous pour of grey cast iron conforming to LR Rules Part 2 (Chapter 7, Sections 1 and 2) or ASTM A48 (Class No. 200B).
- 2.7.4 A thermal history report containing as minimum the temperature and duration during heat treatment must be prepared for each batch.
- 2.7.5 All heat treatments must be carried out in accordance with LR Rules Part 2.
- 2.7.6 The Lifting Link must be evenly heated to 200°C prior to the pouring of the grey cast iron.

2.8 MOORING HARDWARE FINISH

- 2.8.1 All burrs must be removed.
- 2.8.2 All exposed edges must be trimmed or rounded to a radius between 3 mm and 4 mm.

2.9 MECHANICAL STRENGTH

- 2.9.1 Mooring Hardware must be capable of withstanding the proof loads as specified in Appendix A without rupture or deformation as per the LR Rules Part 2.
- 2.9.2 Mooring Hardware must be capable of withstanding the breaking loads specified in Appendix A, for a minimum of 30 seconds, without rupture as per the LR Rules Part 2.

2.10 MARKINGS

- 2.10.1 Mooring Hardware must be stamped with the following identification marks:
- 1) Contractor ID (e.g., ABCD)
 - 2) Year of manufacture (e.g., 2020)
 - 3) Steel grade (U3)
 - 4) Length of chain assembly (e.g. XX.Xm)
 - 5) Diameter of standard link or long link (e.g. XXmm)
- 2.10.2 Markings must be legibly and permanently stamped with 5 mm high lettering in Bold Arial Font.
- 2.10.3 Markings must be stamped on:
- shackle assemblies (**TDS 200 series**)
 - end-links (**TDS 102**) of swivel assemblies (**TDS 300 series**)
 - end-links (**TDS 102**) of chain assemblies (**TDS 400 series**)
 - end-links (**TDS 102**) of bridle assemblies (**TDS 500 series**)
 - Lifting links (**TDS 105**) of counterweights (**TDS 700 series**)
- 2.10.4 The following markings must be cast into the Counterweight body in raised block letters (in Bold Arial Font) as indicated on the TDS:
- Counterweight mass (e.g. 100 KG);
 - Contractor ID (ABCD);
 - Batch number (BN: XXXX);

MOORING HARDWARE FOR AIDS TO NAVIGATION – TECHNICAL STATEMENT OF REQUIREMENTS
Requirements for Mooring Hardware

- Year of manufacture.

2.10.5 Painting or stenciling must not be used.

Section 3 QUALITY ASSURANCE, INSPECTION AND TESTING

3.1 GENERAL

- 3.1.1 All quality assurance inspection and testing must be done in accordance with LR Rules Part 2.
- 3.1.2 The Contractor must correct all defects found during these inspections and tests, and must eliminate the cause of the defects from the Mooring Hardware production process.
- 3.1.3 The results of all the tests and inspections described in this section must be delivered to Canada upon request.

3.2 CRACKS

- 3.2.1 Mooring Hardware as listed in the TDS (Appendix A) must be free from cracks. A crack is defined as a linear defect that has a length of more than three times its width.

3.3 WORKMANSHIP AND FINISH – COUNTERWEIGHT

- 3.3.1 Counterweight surfaces must be free of adhering sand, scale, and any other foreign material.
- 3.3.2 Counterweight surfaces must be free of cracks and hot tears.
- 3.3.3 Counterweight surfaces must be smooth and free from defects or protrusions that might adversely affect the serviceability and handling.
- 3.3.4 Counterweight surfaces must not be repaired by plugging or welding.
- 3.3.5 After casting, all surface slag and projecting edges must be removed.
- 3.3.6 All sharp edges must be ground, and the casting must be left clean.
- 3.3.7 Counterweights must not be painted nor coated.

3.4 INSPECTION AND TESTING – MOORING HARDWARE

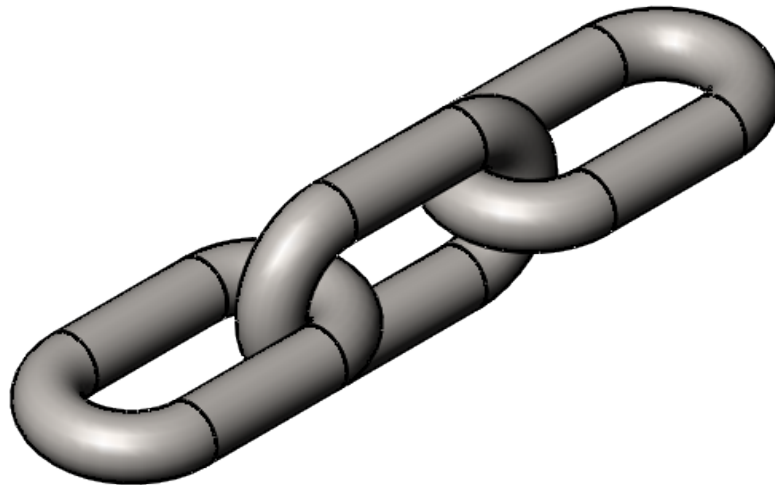
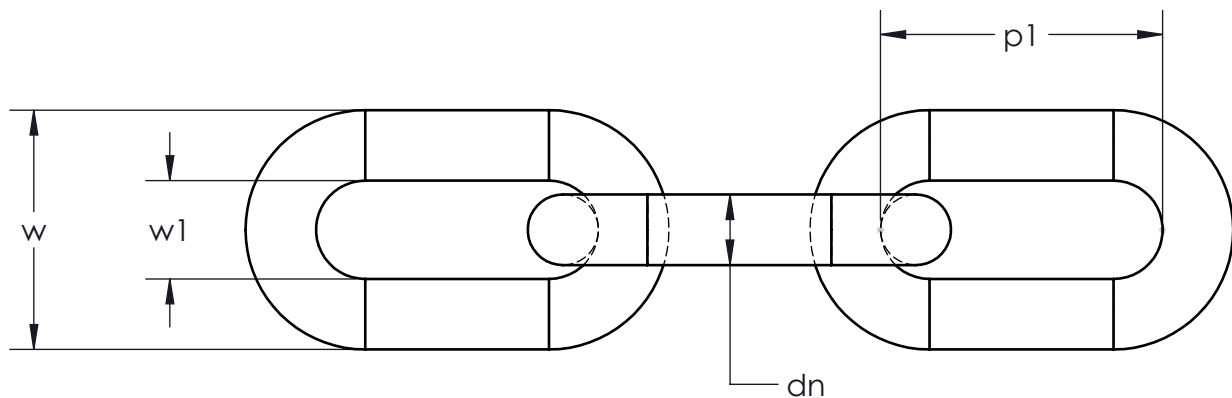
- 3.4.1 The Contractor must perform all inspections and testing necessary in accordance with LR Rules part 2 to ensure that the Mooring Hardware conforms to the requirements of this TSoR.
- 3.4.2 Mechanical properties testing must be carried out by the Contractor on Mooring Hardware in accordance with the LR Rules part 2 (Chapter 10 Section 2).
- 3.4.3 Mooring Hardware must be Proof Load and Breaking Load tested and passed in accordance with the LR Rules Part 2 (Chapter 10 Section 2). The Mooring Hardware must conform to the Proof Loads and the Breaking Loads indicated in Appendix A.
- 3.4.4 A dimensional inspection must be performed by the Contractor on 10% on Mooring Hardware in accordance with the LR Rules Part 2 (Chapter 10 Section 2). The results of this inspection must include measured values and variance, and must be delivered to Canada upon request.
- 3.4.5 The Contractor must weigh each Counterweight and ensure that each Counterweight conforms to the tolerances listed on the TDS.

3.5 CERTIFICATE

- 3.5.1 In accordance with the LR Rules Part 2, the Contractor must provide Canada with a certificate issued by Lloyds Register that all Mooring Hardware conform to this TSoR, TDS and Applicable standards.
- 3.5.2 One (1) certificate must be issued for each Mooring Hardware batch.
- 3.5.3 The certificate must include the following information for all Mooring Hardware:
- 1) Contractor's name;
 - 2) Date of certificate issuance;
 - 3) Description and dimensions;
 - 4) Identification mark;
 - 5) Details of heat treatment;
 - 6) Proof Load and Breaking Load test results, per Section 3.4.3; and
 - 7) Dimensional inspection results, per Section 3.4.4.
 - 8) Details of each Weight test, per Section 3.4.5;
 - 9) Material certificate from the steel mill for steel used to manufacture the **Mooring Hardware**, which include:
 - a) Material heat number;
 - b) Mechanical test results (yield stress, tensile strength, elongation and Charpy V-notch impact tests), as per Section 3.4.2;
 - c) Grade of steel (U3);
 - d) Chemical composition;
 - e) Material certificate for grey cast iron used to manufacture the **Counterweight**, which includes the Batch number;

Appendix A TECHNICAL DATA SHEETS (TDS)

TDS #	Description
100 series : Components	
101	Standard Link
102	End-Link
103	Long Link
104	Bridle Ring
105	Counterweight Lifting Link
200 series: Shackle Assembly	
201	Chain Shackle
202	Bow Shackle
203	Clinch Shackle
204	Narrow Bridle Shackle
300 series: Swivel Assembly	
301	Swivel
400 series: Chain Assembly	
401	Standard Link Chain
402	Long Link Chain
500 series: Bridle Assembly	
501	V Bridle Assembly
502	Y Bridle Assembly
700 series: Counterweight	
701	Counterweight



Maillon standard / *Standard link*

No. Pièce / Part No.	Masse linéaire / <i>Linear mass</i> (kg/m)	Dimensions (mm)				Charges d'épreuve et de rupture pour l'acier laminé Grade U3 / <i>Proof and breaking loads for Grade U3 rolled steel (kN)</i>		
		Diamètre de la barre / <i>Bar diameter</i>	Pas de chaîne / <i>Pitch of chain</i>	Largeur int. / <i>Inside width</i>	Largeur ext. / <i>Outside width</i>	Charge d'utilisation / <i>Safe working load</i>	Charge d'épreuve / <i>Proof load</i>	Charge de rupture / <i>Breaking load</i>
		dn	p1	w1	w (ref)			
101-14	3.6	14	56	20	48	33	115	165
101-16	4.7	16	64	22	54	43	150	214
101-20	7.3	20	80	28	68	67	233	333
101-26	12.3	26	104	36	88	111	389	556
101-28	14.5	28	112	39	95	128	450	642
101-32	18.7	32	128	45	109	166	583	832
101-38	26.4	38	152	53	129	232	812	1160

Notes de dimensions / *Dimensional notes* :

- Les tolérances de fabrication sont de $\pm 2,5 \%$
Toutes les mesures doivent être prise après le test de charge d'épreuve.

Fabrication tolerances dimensions: $\pm 2.5\%$

All measurements are to be taken after proof testing.

Notes de matériaux / *Material note* :

- Enlever tous les bords et toutes barbes tranchantes
Remove all sharp edges and burrs
- Le maillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The link must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.

**POUR SOUMISSION
FOR QUOTATION**

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

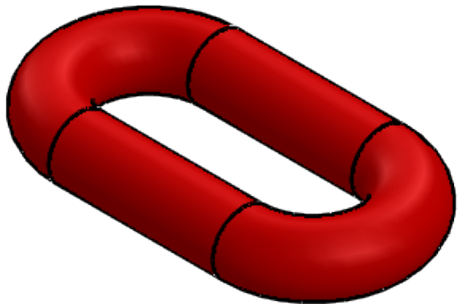
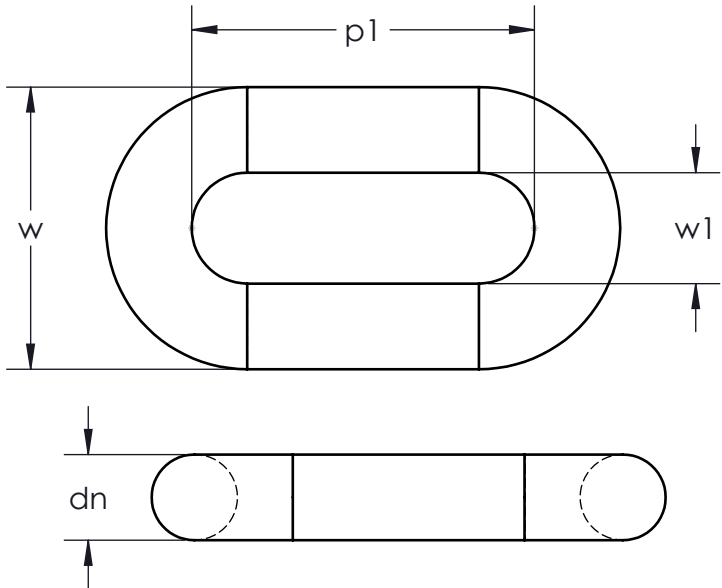
Asset - Actif

Drawing - Dessin

FT-101
TDS-101

Maillon standard / *Standard link*

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:3
drawing no. - no. dessin	sheet-feuille
101	1 / 1
	rev
	1



Maillon d'extrémité / End link

No. Pièce / Part No.	Dimensions (mm)					Charges d'épreuve et de rupture pour l'acier laminé Grade U3 / Proof and breaking loads for Grade U3 rolled steel (kN)		
	Utilise avec le maillon diamètre / For use with link diameter	Diamètre de la barre / Bar diameter	Pas de chaîne / Pitch of chain	Largeur int. / Inside width	Largeur ext. / Outside width	Charge d'utilisation / Safe working load	Charge d'épreuve / Safe load	Charge de rupture / Breaking load
102-18	14	18	72	23	59	33	115	165
102-20	16	20	80	26	66	43	150	214
102-24	20	24	96	31	79	67	233	333
102-32	26	32	128	42	106	111	389	556
102-34	28	34	136	44	112	128	450	642
102-38	32	38	152	49	125	166	583	832
102-46	38	46	184	60	152	232	812	1160

Notes de dimensions / Dimensional notes :

- Les tolérances de fabrication sont de $\pm 2,5\%$
Toutes les mesures doivent être prise après le test de charge d'épreuve.

Fabrication tolerances dimensions $\pm 2,5\%$

All measurements are to be taken after proof testing.

Notes de matériaux / Material notes :

- Enlever tous bords et toutes barbes tranchantes
Remove all sharp edges and burrs
- Le maillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The link must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.

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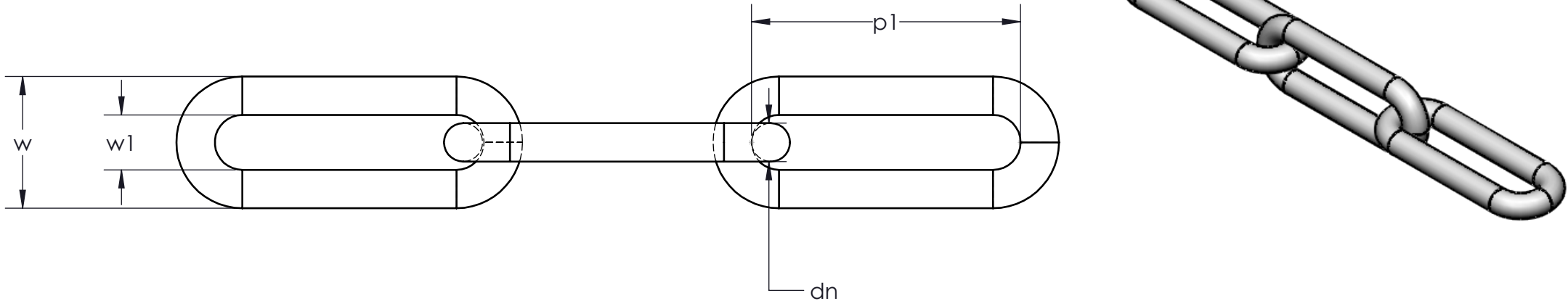
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Drawing - Dessin

FT-102
TDS-102

Maillon d'extrémité / End link

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:3
drawing no. - no. dessin	sheet-feuille
102	1 / 1
	rev
	1



Maillon long / Long link

No. Pièce / Part No.	Masse linéaire / Linear mass (kg/m)	Dimensions (mm)				Charges d'épreuve et de rupture pour l'acier laminé Grade U3 / Proof and breaking load for Grade U3 rolled steel (kN)		
		Diamètre de la barre / Bar diameter	Pas de chaîne / Pitch of chain	Largeur int. / Inside width	Largeur ext. / Outside width	Charge d'utilisation / Safe working load	Charge d'épreuve / Proof load	Charge de rupture / Breaking load
		dn	p1	w1	w (ref)			
103-14	3.2	14	98	20	48	33	115	165
103-20	6.9	20	140	28	68	67	233	333
103-26	11.3	26	182	36	88	111	389	556
103-32	17.6	32	224	45	109	166	583	832
103-38	23.6	38	266	53	129	232	812	1160

POUR SOUMISSION
FOR QUOTATION

Notes de dimensions / Dimensional notes:

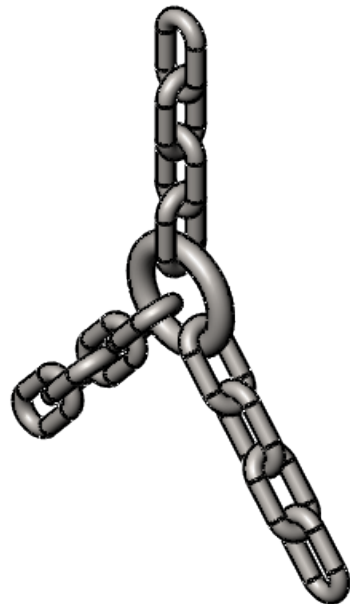
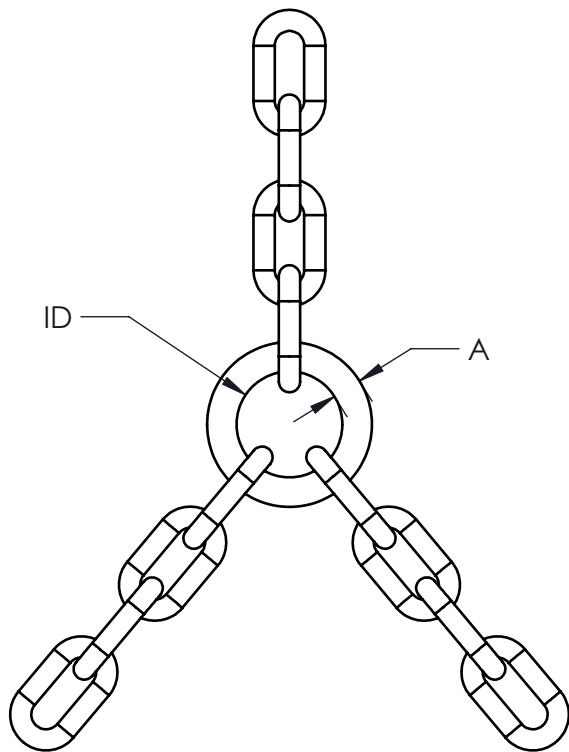
- Les tolérances de fabrication sont de $\pm 2,5 \%$
Toutes les mesures doivent être prise après le test de charge d'épreuve.

*Fabrication tolerances dimensions: $\pm 2.5\%$
All measurements are to be taken after proof testing.*

Notes de matériaux / Material notes:

- Le maillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The link must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.

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Asset - Actif			
Drawing - Dessin			
FT-103 TDS-103			
Maillon long / Long link			
designed - conception		date	
DesignBy		yyyy-mm-dd	
drawn - dessiné		date	
Amrith Senaratne		2022-06-30	
checked - vérifié		date	
NF and GSP		2022-07-12	
approved - approuvé		date	
Pierre-Luc Delage		2022-07-14	
material - matériau		scale - échelle	
Acier / Steel U3		1:2	
drawing no. - no. dessin		sheet-feuille	rev
103		1 / 1	1



Anneau de bride / *Bridle ring*

No. Pièce / <i>Part No.</i>	Dimensions (mm)			Charges d'épreuve et de rupture pour l'acier laminé Grade U3 / <i>Proof and breaking loads for Grade U3 rolled steel (kN)</i>		
	Utilise avec le maillon diamètre / <i>For use with link diameter</i>	Diamètre de la barre / <i>Bar diameter</i>	Diamètre d'anneau in. / <i>Inside ring diameter</i>	Charge d'utilisation / <i>Safe working load</i>	Charge d'épreuve / <i>Proof load</i>	Charge de rupture / <i>Breaking load</i>
		A	ID			
104-20	14	20.0	70	33	115	165
104-28	20	28.0	100	67	233	333
104-36	26	36.0	130	111	389	556
104-39	28	39.0	140	128	450	642
104-45	32	45.0	160	166	583	832
104-53	38	53.0	190	232	812	1160

Notes de dimensions / *Dimensional notes* :

- Les tolérances de fabrication sont de $\pm 2,5\%$
Toutes les mesures doivent être prises après le test de charge d'épreuve.

*Fabrication tolerances dimensions $\pm 2,5\%$
All measurements are to be taken after proof testing.*

-L'anneau doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The ring must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.

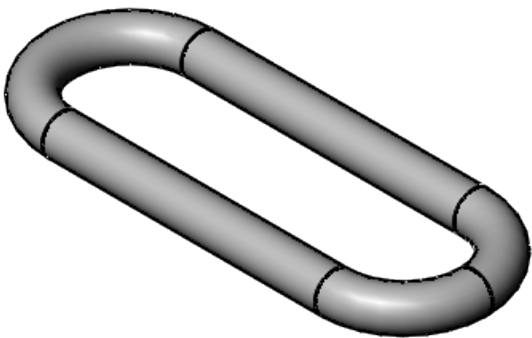
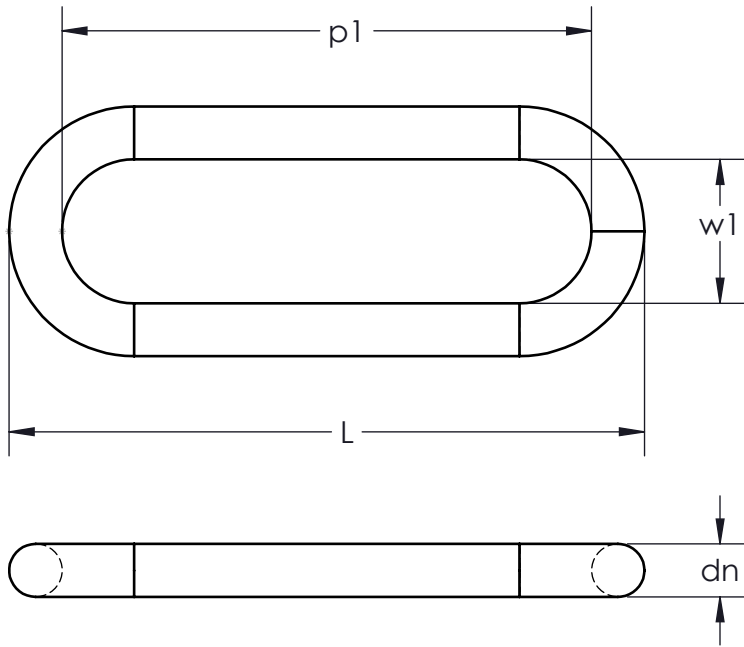
POUR SOUMISSION
FOR QUOTATION

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rev	description	by par	date

Asset - Actif

Drawing - Dessin
FT-104
TDS-104
Anneau de Bride / *Bridle ring*

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:10
drawing no. - no. dessin	sheet-feuille
104	1 / 1
	rev
	1



Maillon de levage / Lifting link

No. Pièce / Part No.	Dimensions (mm)				Charges d'épreuve et de rupture pour l'acier laminé Grade U3 / Proof and breaking loads for Grade U3 rolled steel (kN)		
	Diamètre de la barre / Bar diameter	Pas / Pitch	Largeur int. / Inside width	Longueur ext. / Outside width	Charge d'utilisation / Safe working load	Charge d'épreuve / Proof load	Charge de rupture / Breaking loads
	dn	p1	w1	L (ref)			
105-32	32	380	80	444	166	583	832
105-44	44	565	100	653	307	1076	1537

Notes de dimensions / Dimensional notes :

- Les tolérances de fabrication sont de +/- 2.5 %
Toutes les mesures doivent être prises après le test de charge d'épreuve.

*Fabrication tolerances dimensions +/- 2.5 %
All measurements are to be taken after proof testing.*

Notes de matériaux / Material notes :

- Le maillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The link must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.

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FOR QUOTATION**

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

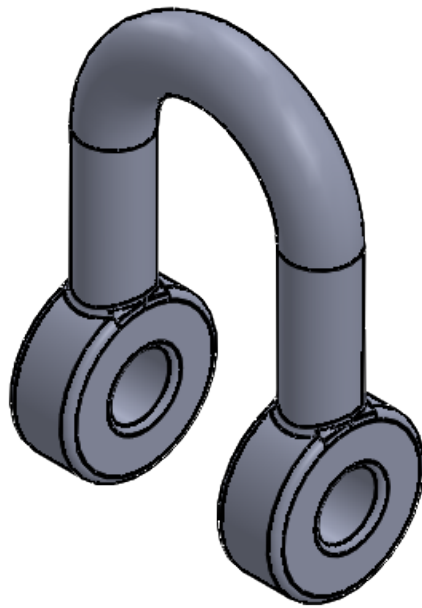
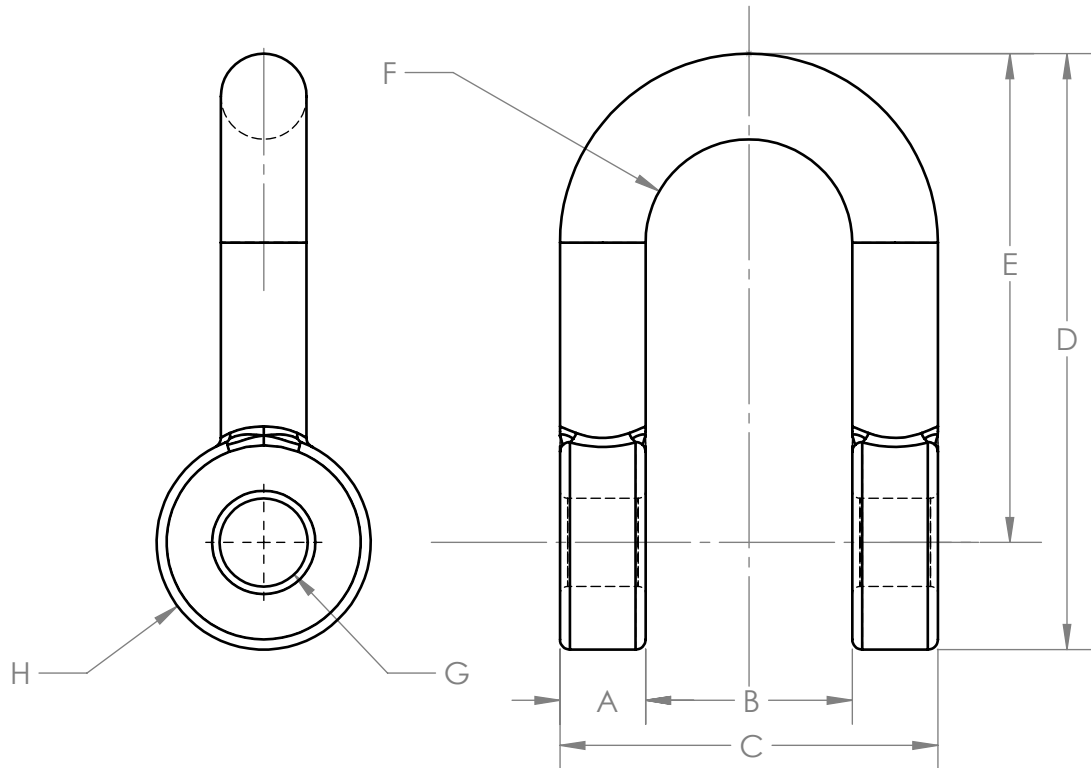
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Drawing - Dessin

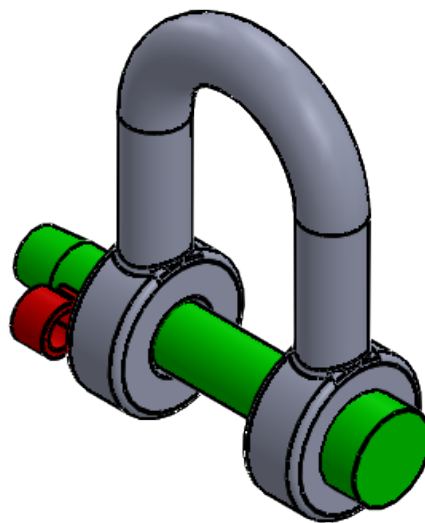
FT-105
TDS-105

Maillon de levage / Lifting link

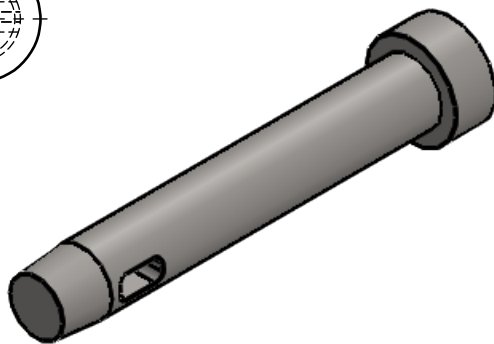
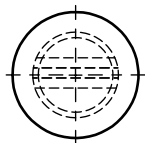
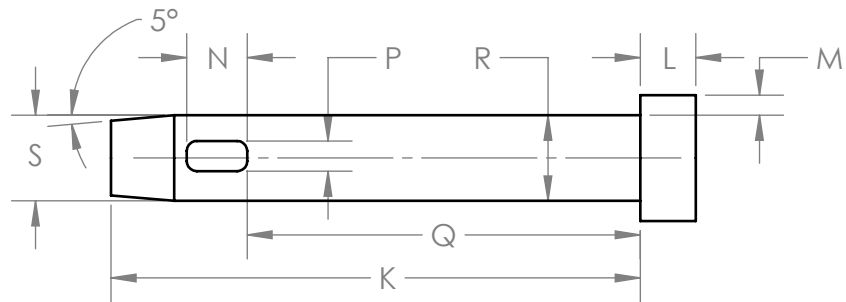
designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:2
drawing no. - no. dessin	sheet-feuille
105	1 / 1
	rev
	1



Manille / Shackle

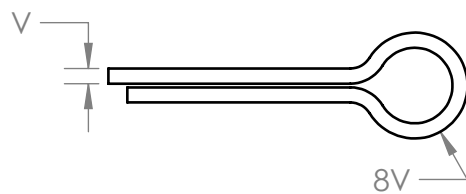
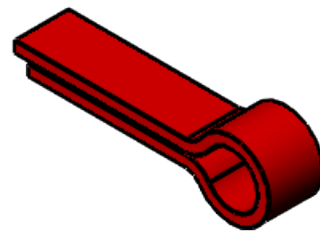
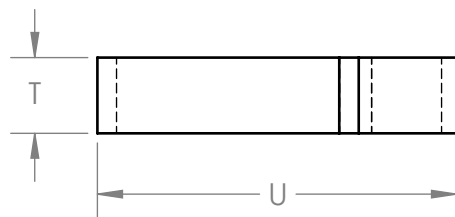


Manilles / Shackles								
No. Pièce / Part No.	Dimensions (mm)							
	Dimensions de la barre A / Bar size A	B	C	D	E	F (rad)	G (dia)	H (dia)
201-18-S	18	44	80	118.0	98	22.0	19	40
201-20-S	20	56	96	150.0	125	28.0	21	50
201-24-S	24	65	113	180.0	150	32.5	25	60
201-32-S	32	80	144	230.0	190	40.0	33	80
201-34-S	34	82	150	237.0	194	41.0	35	85
201-38-S	38	85	161	249.5	202	42.5	39	95
201-46-S	46	120	212	329.5	272	60.0	47	115



Manillon / Pin

Manillons / Pins								
No. Pièce / Part No.	Dimensions (mm)							
	K	L	M	N	P	Q	R (dia)	S (dia)
201-18-P	120	19	6	24	6	81	18	16
201-20-P	140	19	6	24	10	97	20	18
201-24-P	160	19	6	24	12	114	24	22
201-32-P	195	22	8	24	12	145	32	29
201-34-P	205	22	8	24	12	151	34	31
201-38-P	225	22	8	30	12	162	38	34
201-46-P	270	36	8	30	12	213	46	42



Clavette / Cotter Key
Échelle / Scale: 1:2

Clavettes / Cotter Keys			
No. Pièce / Part No.	Dimensions (mm)		
	T	U	V
201-18-C	20	90	2
201-(20-34)-C	20	90	4
201-(38-46)-C	26	110	5

POUR SOUMISSION
FOR QUOTATION

1	Updated for TSor 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin

FT-201
TDS-201

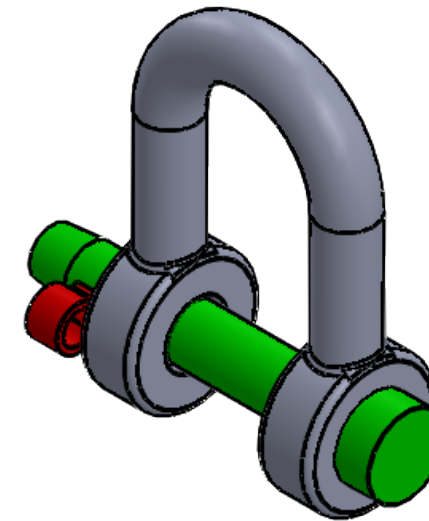
Manille de chaîne / Chain shackle

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel	1:3
drawing no. - no. dessin	sheet-feuille
201	1 / 2
	rev
	1



Ensemble de manille / Shackle assembly

No. Catalogue / Catalog No.	Charge d'épreuve et de rupture pour l'acier laminé Grade U3 / Proof and breaking loads for Grade U3 rolled steel (kN)		
	Charge d'utilisation / Safe working load	Charge d'épreuve / Proof load	Charge de rupture / Breaking load
CN-201-18	33	115	165
CN-201-20	43	150	214
CN-201-24	67	233	333
CN-201-32	111	389	556
CN-201-34	128	450	642
CN-201-38	166	583	832
CN-201-46	232	812	1160



Note: CN-201-XX fait référence à la combinaison du manille, du manillon et de la clavette avec les numéros de pièces correspondants
CN-201-XX refers to the combination of shackle, pin and cotter key with corresponding part numbers

Notes de dimensions / Dimensional notes :

- Les tolérances de dimension / *Dimension tolerances :*

Dimensions de la barre / *Bar size :* + 5 %, - 0 %

Manillon / *Pin diameter :* + 0 %, -2,5 %

Trou / *Hole diameter :* + 2,5 %, - 0 %

Notes de matériaux / Material notes :

- Aucune soudure n'est permise sur les manillons

Welded pin construction will not be accepted

- Le manille et le manillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.

The shackle and pin must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel

- La clavette doit être fait en acier inoxydable conformes aux normes AISI 316.

The cotter key must be made of stainless steel meeting AISI 316 standards.

**POUR SOUMISSION
FOR QUOTATION**

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin

FT-201
TDS-201

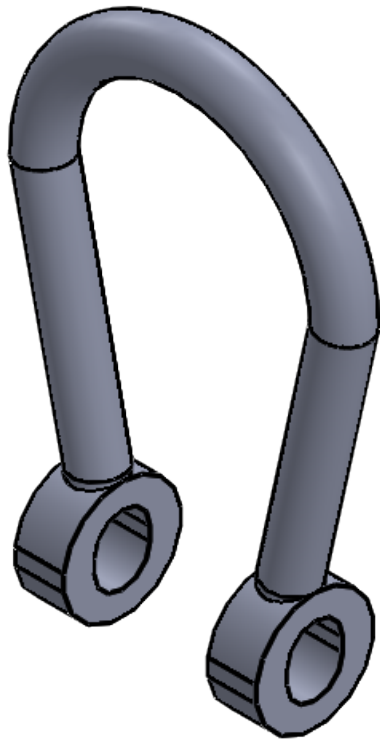
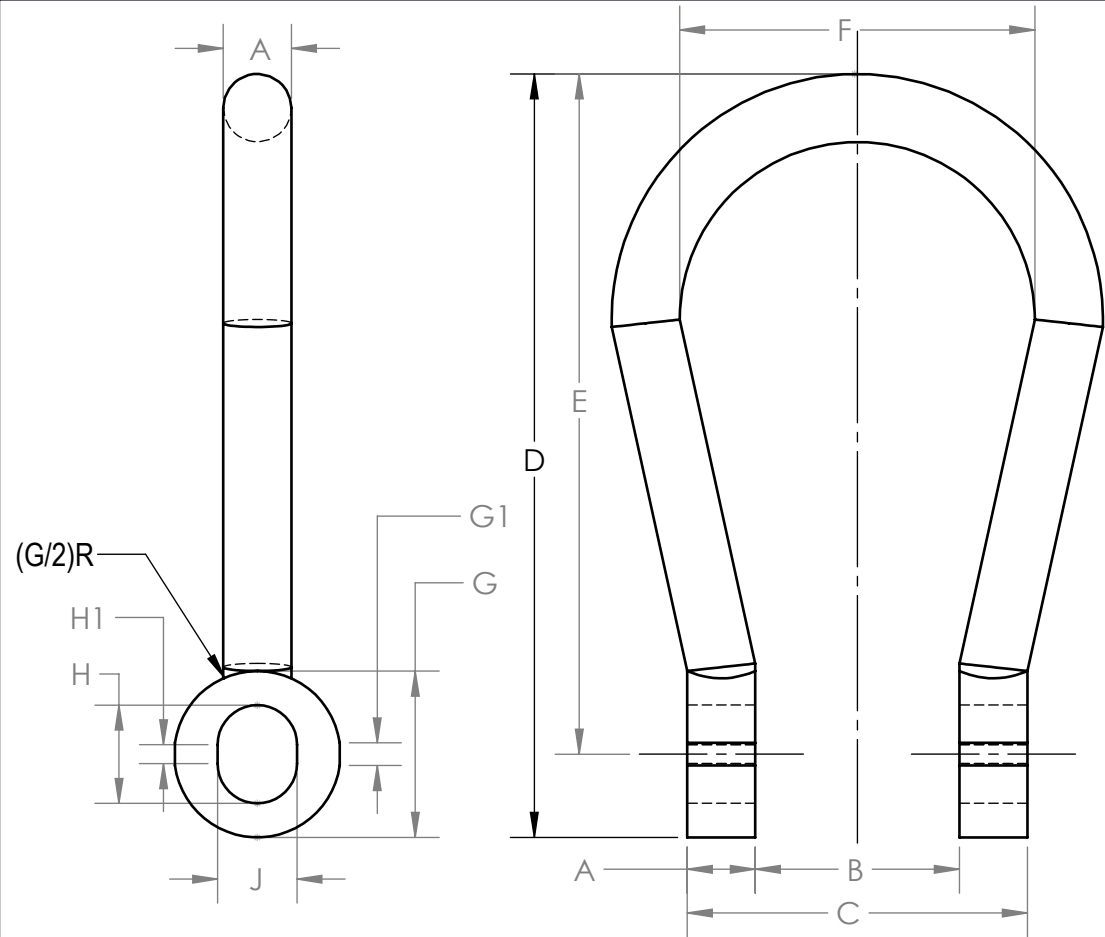
Manille de chaîne / Chain shackle

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel	1:3
drawing no. - no. dessin	sheet-feuille
201	2 / 2
	rev
	1

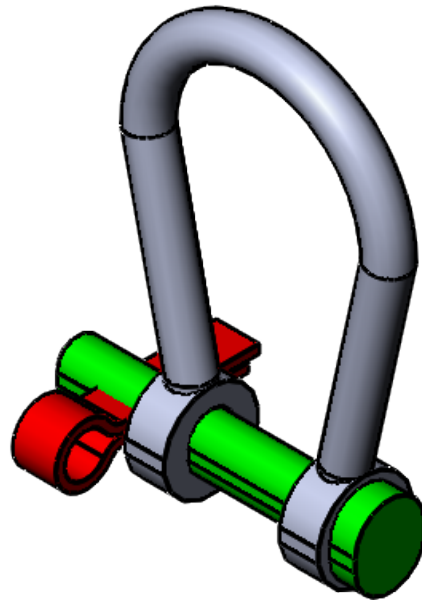


Fisheries and Oceans
Canada
Canadian
Coast Guard

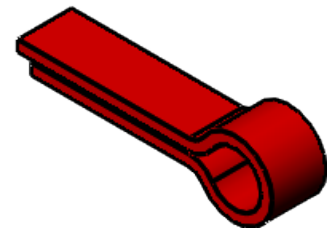
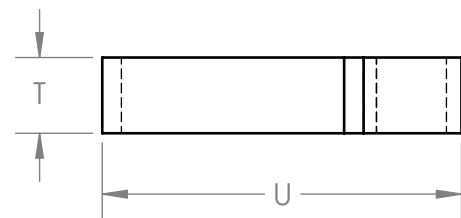
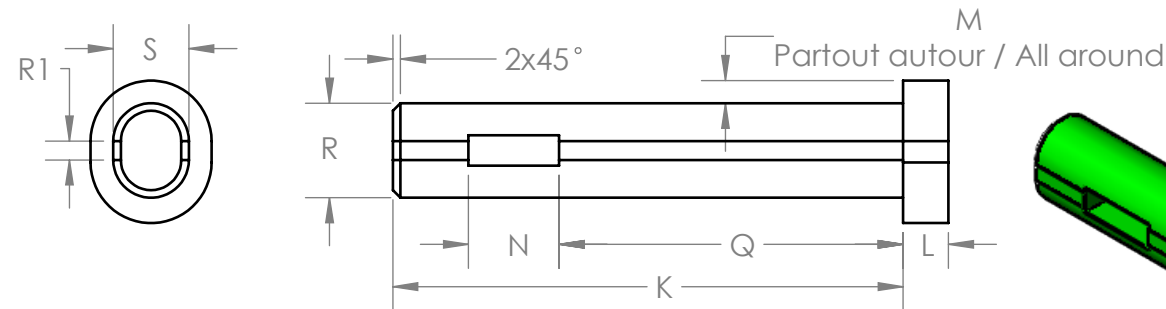
Pêches et Océans
Canada
Garde côtière
Canadienne



Manille / Shackle

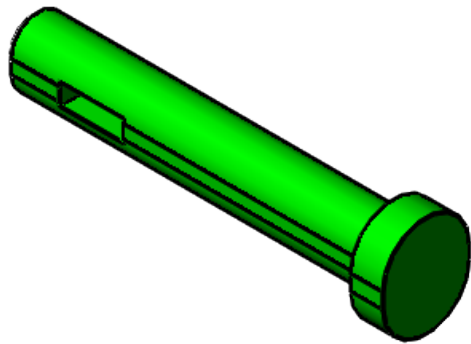


Manilles / Shackles											
No. Pièce / Part No.	Dimensions (mm)										
	Dimensions de la barre / Bar Size A	B	C	D	E	F	G	G1	H	H1	J
202-18-S	18	54	90	200	178	94	44	6	26	5	21
202-20-S	20	58	98	250	226	98	48	6	28	5	23
202-24-S	24	62	110	257	232	100	50	6	29	5	24
202-32-S	32	56	120	272	240	100	64	6	37	6	31
202-38-S	38	64	140	320	281	105	78	13	48	13	35
202-46-S	46	58	150	340	294	105	92	19	59	19	40



Clavette / Cotter Key

Manillons / Pins									
No. Pièce / Part No.	Dimensions (mm)								
	K	L	M	N	P	Q	R	R1	S
202-18-P	135	12	6	24	8	91	25	5	20
202-20-P	140	12	6	24	10	99	27	5	22
202-24-P	160	12	6	30	12	111	28	5	23
202-32-P	170	12	8	30	12	121	36	6	30
202-38-P	190	12	8	30	12	141	47	13	34
202-46-P	205	19	8	36	12	151	58	19	39



Manillon / Pin

Clavettes / Cotter Keys			
No. Pièce / Part No.	Dimensions (mm)		
	T	U	V
202-(18-20)-C	20	90	2
202-(24-38)-C	26	110	4
202-46-C	32	140	5

POUR SOUMISSION
FOR QUOTATION

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin

FT-202
TDS-202

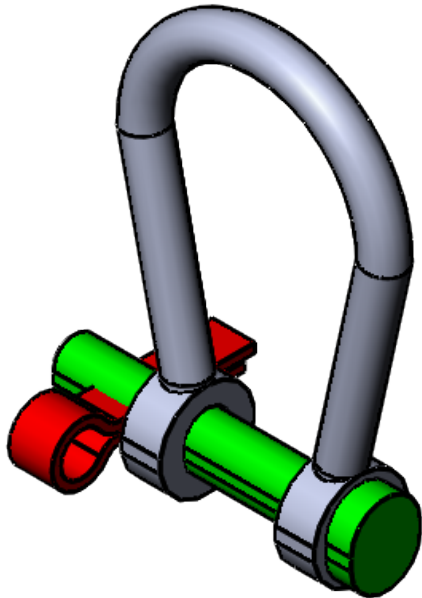
Manille lyre / Bow shackle

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel	1:2
drawing no. - no. dessin	sheet-feuille
202	1 / 2
	rev
	1



Ensemble de manille / Shackle Assembly

No. Catalogue / Catalog No.	Charges d'épreuve et de rupture pour l'acier laminé Grade U3 / Proof and Breaking Loads for Grade U3 rolled steel (kN)		
	Charge d'utilisation / Safe working load	Charge d'épreuve / Proof working load	Charge de rupture / Breaking load
CN-202-18	33	115	165
CN-202-20	43	150	214
CN-202-24	67	233	333
CN-202-32	111	389	556
CN-202-38	166	583	832
CN-202-46	232	812	1160



Note: CN-202-XX fait référence à la combinaison du manille, du manillon et de la clavette avec les numéros de pièces correspondants
CN-202-XX refers to the combination of shackle, pin and cotter key with corresponding part numbers

Notes :

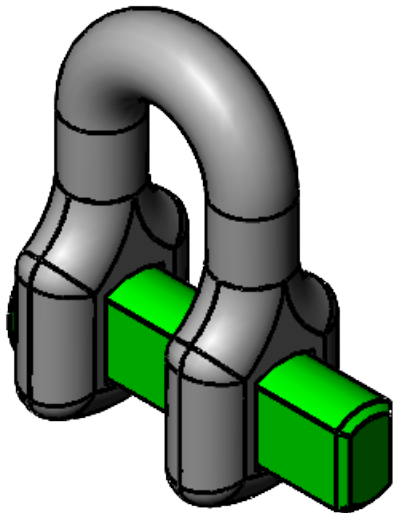
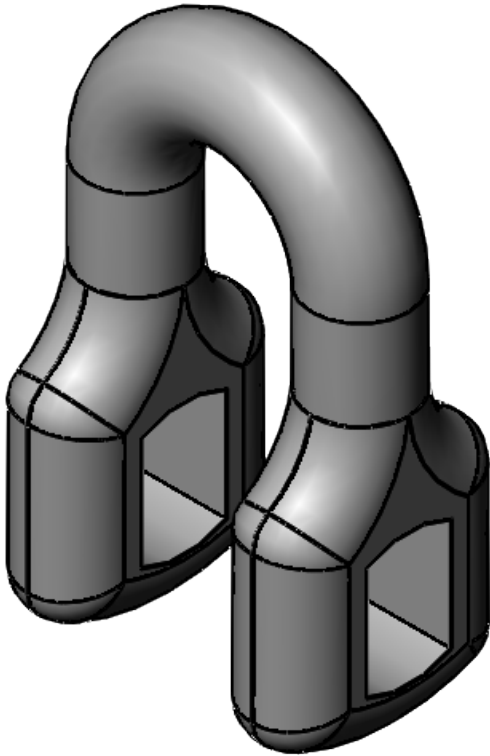
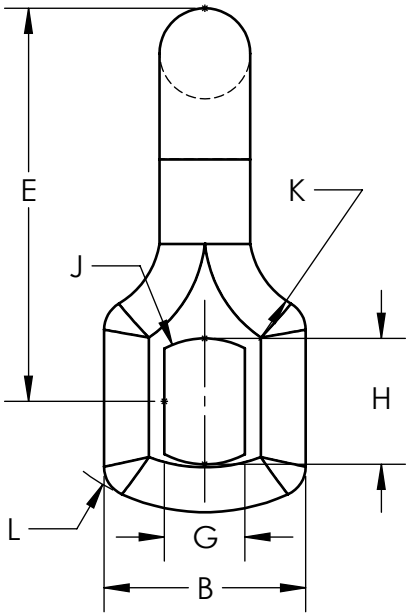
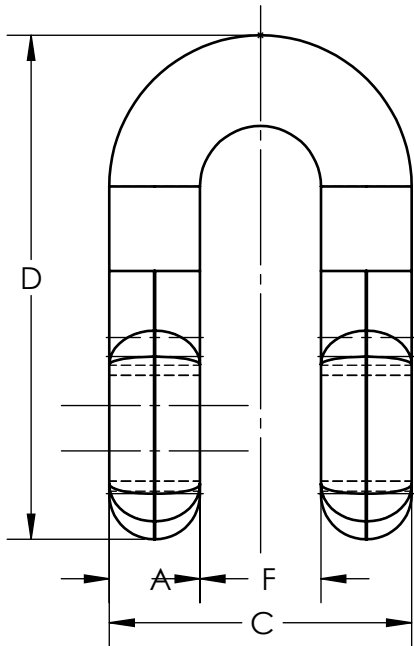
- Les tolérances de dimensions / *Dimensional tolerances* :
Dimensions de la barre / *Bar dimensions A* : + 5 %, - 0 %
Manillon / *Pin diameter G* : + 0 %, -2,5 %
Trou / *Hole diameter C* : + 2,5 %, - 0 %
Autres dimensions / *Other dimensions* : ± 2,5 %
- À l'assemblage, le manillon doit passer librement dans le trou du manille
Pin must pass freely through holes in shackle during assembly
- Les manillons doivent être droite; les courbures sont inadmissibles. La tête et le corps du manillon doivent être concentrique de l'une à l'autre.
Pins shall be straight with no curvature. Head and pin body shall be concentric
- Enlever tous bords et toutes barbes tranchantes
Remove all sharp edges and burrs

Notes de matériaux / Material notes:

- Aucune soudure n'est permise sur les manillons
Welded pin construction will not be accepted
- Le manille et le manillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The shackle and pin must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel
- La clavette doit être fait en acier inoxydable conformes aux normes AISI 316.
The cotter key must be made of stainless steel meeting AISI 316 standards.

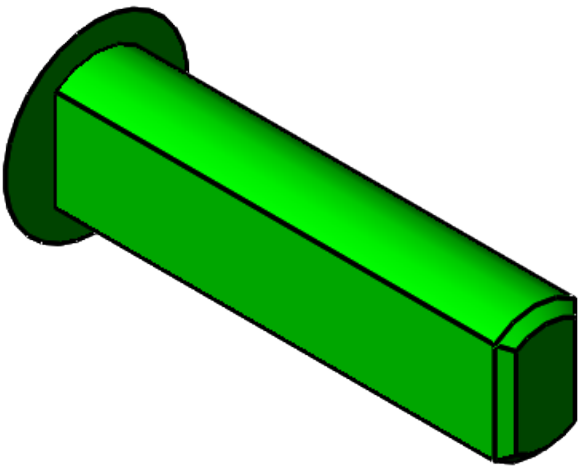
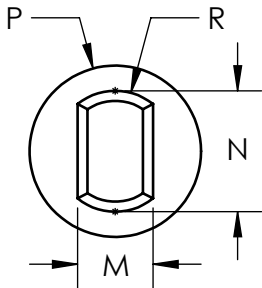
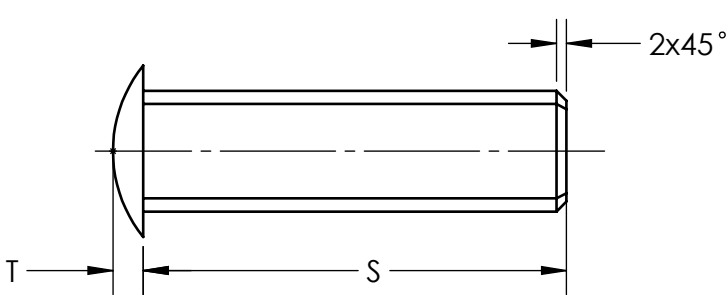
**POUR SOUMISSION
FOR QUOTATION**

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date
Asset - Actif			
Drawing - Dessin			
FT-202 TDS-202			
Manille lyre / Bow shackle			
designed - conception	date		
DesignBy	yyyy-mm-dd		
drawn - dessiné	date		
Amrith Senaratne	2022-06-30		
checked - vérifié	date		
NF and GSP	2022-07-12		
approved - approuvé	date		
Pierre-Luc Delage	2022-07-14		
material - matériau	scale - échelle		
Acier / Steel	1:2		
drawing no. - no. dessin	sheet-feuille	rev	
202	2 / 2	1	



Manille / Shackle

Manilles / Shackles											
No. Pièce / Part No.	Dimensions (mm)										
	Dimensions de la barre A / Bar size A	B	C	D	E	F	G	H	J (rad)	K (rad)	L
203-20-S	20	40	64	100	78	24	16	25	13	17	22
203-28-S	28	58	90	145	116	34	22	35	18	25	29
203-36-S	36	75	116	190	149	44	28	45	23	32	41
203-45-S	45	92	144	235	183	54	34	55	28	39	52
203-53-S	53	110	170	275	216	64	41	65	33	47	59



Manillon / Pin

Manillons / Pins						
No. Pièce / Part No.	Dimensions (mm)					
	M	N	P (dia)	R	S	T
203-20-P	15	24	34	12	84	6
203-22-P	16	26	35	13	91	6
203-28-P	21	34	44	17	110	8
203-36-P	27	44	54	22	136	8
203-45-P	33	54	66	27	164	9
203-53-P	40	64	76	32	190	9

POUR SOUMISSION
FOR QUOTATION

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin

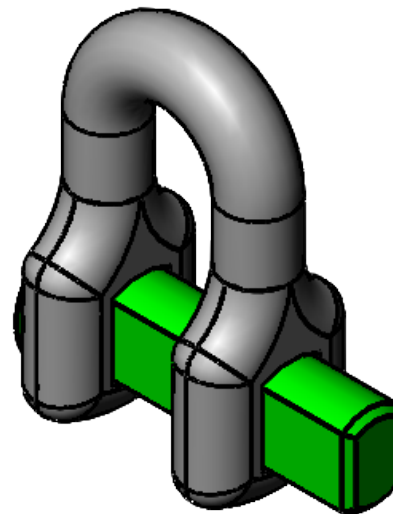
FT-203
TDS-203

Manille à rivet / Clinch shackle

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:1
drawing no. - no. dessin	sheet-feuille
203	1 / 2
	rev
	1

**Ensemble de manille / Shackle assembly**

No. Catalogue / Catalog No.	Charges d'épreuve et de rupture pour l'acier laminé Grade U3 / Proof and breaking loads for Grade U3 rolled steel (kN)		
	Charge d'utilisation / Safe working load	Charge d'épreuve / Proof load	Charge de rupture / Breaking load
CN-203-20	33	115	165
CN-203-28	67	233	333
CN-203-36	111	389	556
CN-203-45	166	583	832
CN-203-53	232	812	1160



Note: CN-203-XX fait référence à la combinaison du manille, du manillon et de la clavette avec les numéros de pièces correspondants
CN-203-XX refers to the combination of shackle, pin and cotter key with corresponding part numbers

Notes :

- Les tolérances de dimensions / *Dimensional tolerances* :
Dimensions de la barre / *Bar dimensions A* : + 5 %, - 0 %
Manillon / *Pin diameter G* : + 0 %, - 2,5 %
Trou / *Hole diameter C* : + 2,5 %, - 0 %
Autres dimensions / *Other dimensions* : $\pm 2,5$ %
- À l'assemblage, le manillon doit passer librement dans le trou du manille
Pin must pass freely through holes in shackle during assembly
- Les manillons doivent être droite; les courbures sont inadmissibles. La tête et le corps du manillon doivent être concentrique de l'une à l'autre.
Pins shall be straight with no curvature. Head and pin body shall be concentric
- Enlever tous bords et toutes barbes tranchantes
Remove all sharp edges and burrs

Notes de matériaux / Material notes:

- Aucune soudure n'est permise sur les manillons
Welded pin construction will not be accepted
- Le manille et le manillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The shackle and pin must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel

**POUR SOUMISSION
FOR QUOTATION**

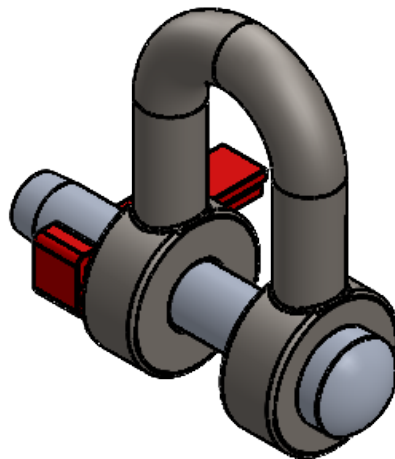
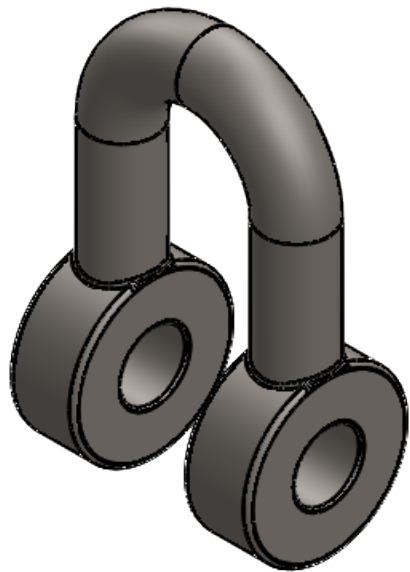
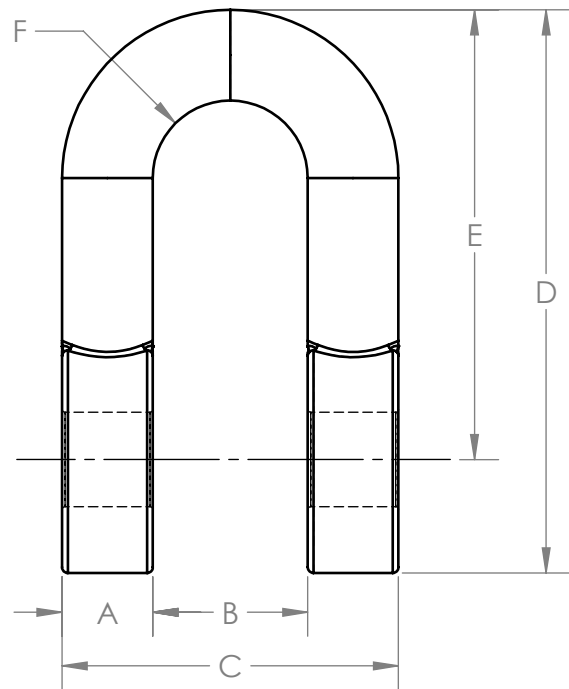
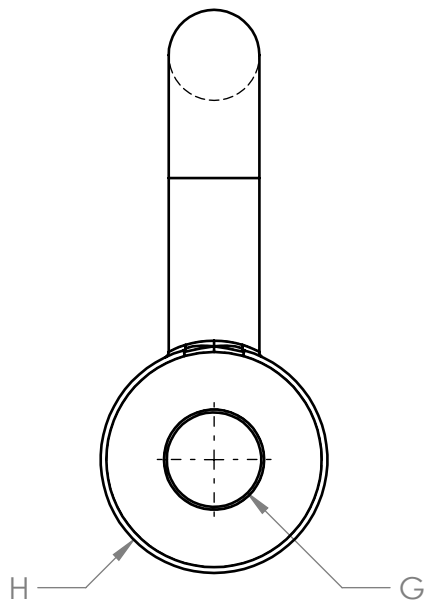
1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin
FT-203
TDS-203

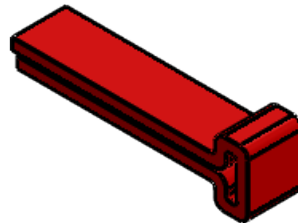
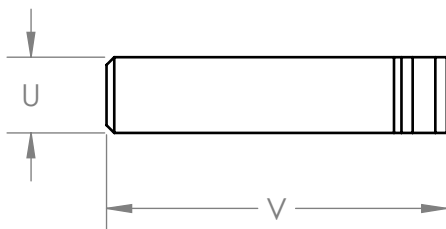
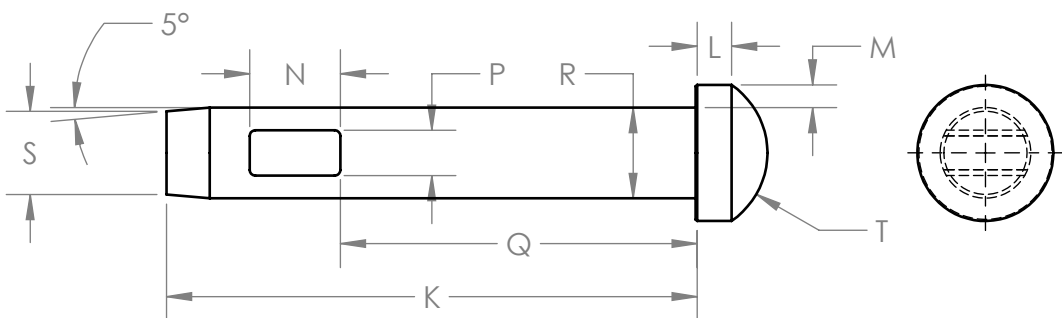
Manille à rivet / Clinch shackle

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:1
drawing no. - no. dessin	sheet-feuille
203	2 / 2
	rev
	1

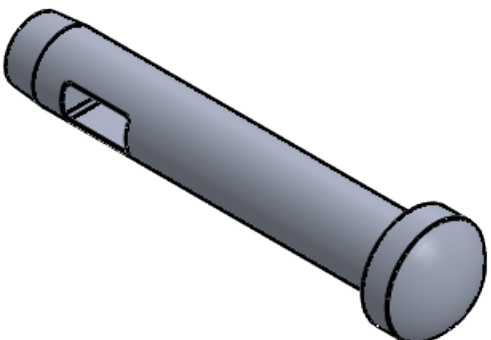
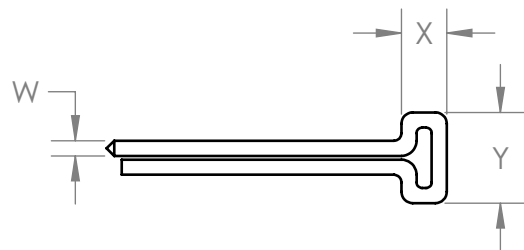


Manille / Shackle

Manilles / Shackles								
No. Pièce / Part No.	Dimensions (mm)							
	Dimensions de la barre A / Bar size A	B	C	D	E	F (rad)	G (dia)	H (dia)
204-18-S	18	31.0	67.0	112.0	92.0	15.0	19	40
204-20-S	20	34.5	74.5	124.5	99.5	17.25	21	50
204-24-S	24	41.0	89.0	149.0	119.0	20.5	25	60
204-32-S	32	55.0	119.0	199.0	159.0	27.5	33	80
204-38-S	38	65.0	141.0	236.0	188.5	32.5	39	95
204-46-S	46	79.0	171.0	286.0	228.5	39.5	47	115



Clavette / Cotter Key



Manillon / Pin

Manillons / Pins									
No. Pièce / Part No.	Dimensions (mm)								
	K	L	M	N	P	Q	R (dia)	S (dia)	T (rad)
204-18-P	110	9.5	6	24	6	71	18	16	16
204-20-P	125	9.5	6	24	10	82	20	18	19
204-24-P	140	9.5	6	24	12	94	24	22	22
204-32-P	175	11	8	24	12	125	32	29	30
204-38-P	210	11	8	30	12	147	38	34	35
204-46-P	240	18	8	30	12	178	46	42	36

Clavettes / Cotter Keys					
No. Pièce / Part No.	Dimensions (mm)				
	U	V	W	X	Y
204-18-C	20	90	2	8	16
204-(20-32)-C	20	90	4	12	24
204-(38-46)-C	26	110	5	16	35

POUR SOUMISSION
FOR QUOTATION

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin

FT-204
TDS-204

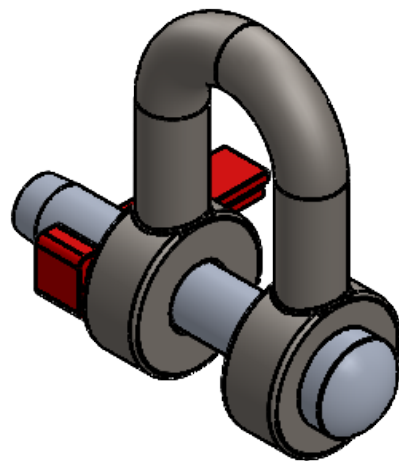
Manille de bride étroite /
Narrow bridle shackle

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel	1:2
drawing no. - no. dessin	sheet-feuille
204	1 / 2
	rev
	1



Ensemble de manille / *Shackle assembly*

No. Catalogue / <i>Catalog No.</i>	Charge d'épreuve et de rupture pour l'acier laminé Grade U3 / <i>Proof and breaking loads for Grade U3 rolled steel (kN)</i>		
	Charge d'utilisation / <i>Safe working load</i>	Charge d'épreuve / <i>Proof load</i>	Charge de rupture / <i>Breaking load</i>
CN-204-18	33	115	165
CN-204-20	43	150	214
CN-204-24	67	233	333
CN-204-32	111	389	556
CN-204-38	166	583	832
CN-204-46	232	812	1160



Note: CN-204-XX fait référence à la combinaison du manille, du manillon et de la clavette avec les numéros de pièces correspondants
CN-204-XX refers to the combination of shackle, pin and cotter key with corresponding part numbers

Notes de dimensions / *Dimensional notes*:

- Les tolérances de dimension / *Dimension tolerances*:
Dimensions de la barre / *Bar size*: + 5 %, - 0 %
Manillon / *Pin diameter*: + 0 %, -2,5 %
Trou / *Hole diameter*: + 2,5 %, - 0 %

Notes de matériaux / *Material notes*:

- Aucune soudure n'est permise sur les manillons
Welded pin construction will not be accepted
- Le manille et le manillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The shackle and pin must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel
- La clavette doit être fait en acier inoxydable conformes aux normes AISI 316.
The cotter key must be made of stainless steel meeting AISI 316 standards.

POUR SOUMISSION
FOR QUOTATION

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin

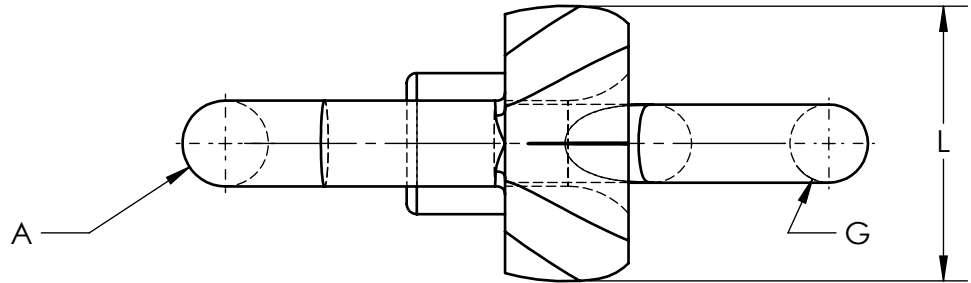
FT-204
TDS-204

Manille de bride étroite /
Narrow bridle shackle

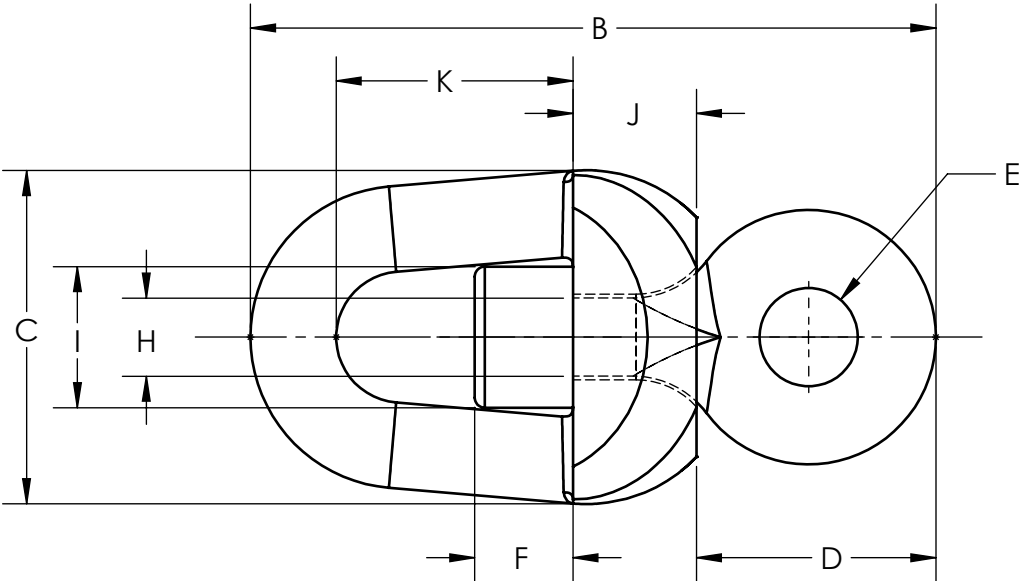
designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel	1:2
drawing no. - no. dessin	sheet-feuille
204	2 / 2
	rev
	1



C

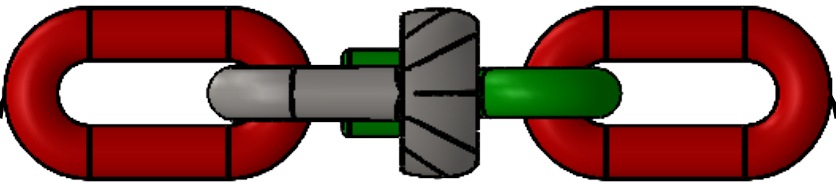


B



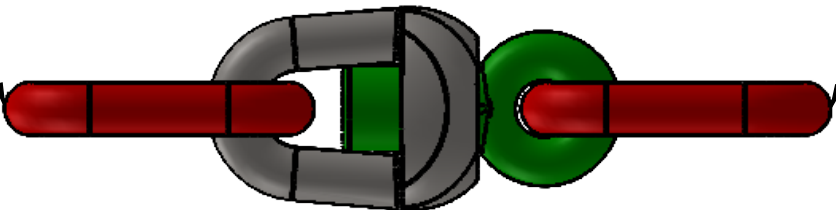
A

301



Maillons d'extrémité (FT-102)
End link (TDS-102)

Maillons d'extrémité (FT-102)
End link (TDS-102)



L'assemblage doit être complété avec un maillon d'extrémité à chaque bout.
The assembly must be completed with one end link at each extremity.

Ensemble d'émerillon / Swivel assembly

No. Catalogue / Catalog No.	Maillon d'extrémité / End link	Quantité de maillon d'extrémité / End link quantity	Dimensions (mm)											
			A	B	C	D	E	F	G	H	I	J	K	L
CN-301-18	102-18	2	18	137	66	48	20	20	15	17	28	25	47	48
CN-301-20	102-20	2	20	155	75	54	22	22	18	19	32	28	54	54
CN-301-24	102-24	2	24	194	94	68	28	28	22	24	40	35	67	68
CN-301-32	102-32	2	32	252	122	88	36	36	29	31	52	46	87	88
CN-301-34	102-34	2	34	272	132	95	39	39	31	33	56	49	94	95
CN-301-38	102-38	2	38	310	150	109	45	45	35	38	64	56	107	109
CN-301-46	102-46	2	46	369	179	129	53	53	42	46	76	67	127	129

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Asset - Actif

Drawing - Dessin

FT-301
TDS-301

Émerillon / Swivel

designed - conception
DesignBy
date
yyyy-mm-dd

drawn - dessiné
Amrith Senaratne
date
2022-06-30

checked - vérifié
NF and GSP
date
2022-07-12

approved - approuvé
Pierre-Luc Delage
date
2022-07-14

material - matériau
Acier / Steel U3
scale - échelle
1:3

drawing no. - no. dessin
301
sheet-feuille
1 / 2
rev
1

ANSI B



Ensemble d'émerillon / Swivel assembly

No. Catalogue / Catalog No.	Maillon d'extrémité / End link	Charges d'épreuve et de rupture pour l'acier laminé Grade U3 / Proof and breaking loads for Grade U3 rolled steel (kN)		
		Charge d'utilisation / Safe working load	Charge d'épreuve / Proof load	Charge de rupture / Breaking load
CN-301-18	102-18	33	115	165
CN-301-20	102-20	43	150	214
CN-301-24	102-24	67	233	333
CN-301-32	102-32	111	389	556
CN-301-34	102-34	128	450	642
CN-301-38	102-38	166	583	832
CN-301-46	102-46	232	812	1160



Notes de dimensions / Dimensional notes :

- L'émerillon comprend deux anneaux de bout
Swivel assembly includes two installed end links
- Les tolérances de dimension / *Dimensional tolerances:*
Dimensions de la barre / *Bar size* : + 5%, -0%
Autres dimensions / *Other dimensions* : $\pm 2.5\%$
- Toutes les mailles de bout doivent être conforme au No. Pièce 102
All End links must conform with Part No. 102

Notes de matériaux / Material notes:

- Enlever toutes les arrêtes et ébarbures tranchantes
Remove all sharp edges and burrs
- Le dégagement entre l'oculaire et le pivot ne dépassera pas 1mm
Clearance between eyepiece and swivel shall not exceed 1 mm
- Les émerillons doivent être formés par refoulage et soudage d'un manchon massif sur l'axe de pivotement
The swivels must be formed by upset forging, and welding a solid sleeve onto the swivel pin
- Le filletage et goupillage ne seront pas acceptable
Threading and pining will not be acceptable
- L'émerillon doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The swivel must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.

POUR SOUMISSION
FOR QUOTATION

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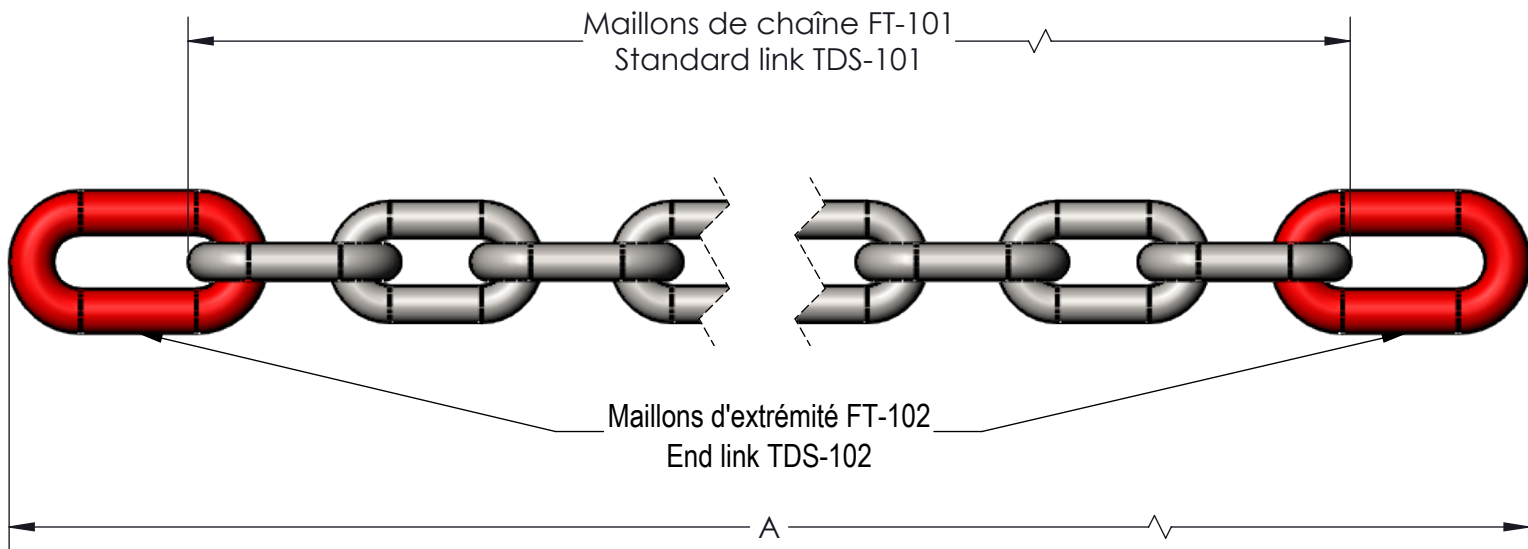
Asset - Actif

Drawing - Dessin

FT-301
TDS-301

Émerillon / Swivel

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:3
drawing no. - no. dessin	sheet-feuille
301	2 / 2
	rev
	1



Chaîne à maillons standards / *Standard link chain*

No.Catalogue / <i>Catalog No.</i>	Masse / <i>Mass (kg)</i>	Maillon Standard / <i>Standard link</i>	Maillon d'extrémité / <i>End link</i>	A (m)	Charges d'épreuve et de rupture pour l'acier Grade U3 / <i>Proof and breaking loads for Grade U3 steel (kN)</i>		
					Charge d'utilisation / <i>Safe working load</i>	Charge d'épreuve / <i>Proof load</i>	Charge de rupture / <i>Breaking load</i>
CN-401-18.5-14	66.2	101-14	102-18	18.5	33	115	165
CN-401-18.5-16	86.5	101-16	102-20		43	150	214
CN-401-18.5-20	135.1	101-20	102-24		67	233	333
CN-401-18.5-26	228.4	101-26	102-32		111	389	556
CN-401-18.5-28	268.3	101-28	102-34		128	450	642
CN-401-18.5-32	345.9	101-32	102-38		166	583	832
CN-401-18.5-38	487.8	101-38	102-46		232	812	1160
CN-401-27.5-14	98.4	101-14	102-18	27.5	33	115	165
CN-401-27.5-16	128.6	101-16	102-20		30	150	150
CN-401-27.5-20	200.9	101-20	102-24		67	233	333
CN-401-27.5-26	339.5	101-26	102-32		111	389	556
CN-401-27.5-28	398.8	101-28	102-34		128	450	642
CN-401-27.5-32	514.2	101-32	102-38		166	583	832
CN-401-27.5-38	725.1	101-38	102-46		232	812	1160

Notes de dimensions / *Dimensional notes:*

- La chaîne est disponible en deux différentes longueurs (dimension A)
Chain can be of two differents length (dimension A)

Notes de matériaux / *Material notes:*

- Tous les composants d'amarrage doivent être conformes à leur FT.
All mooring accessories must conform to their TDS

POUR SOUMISSION
FOR QUOTATION

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

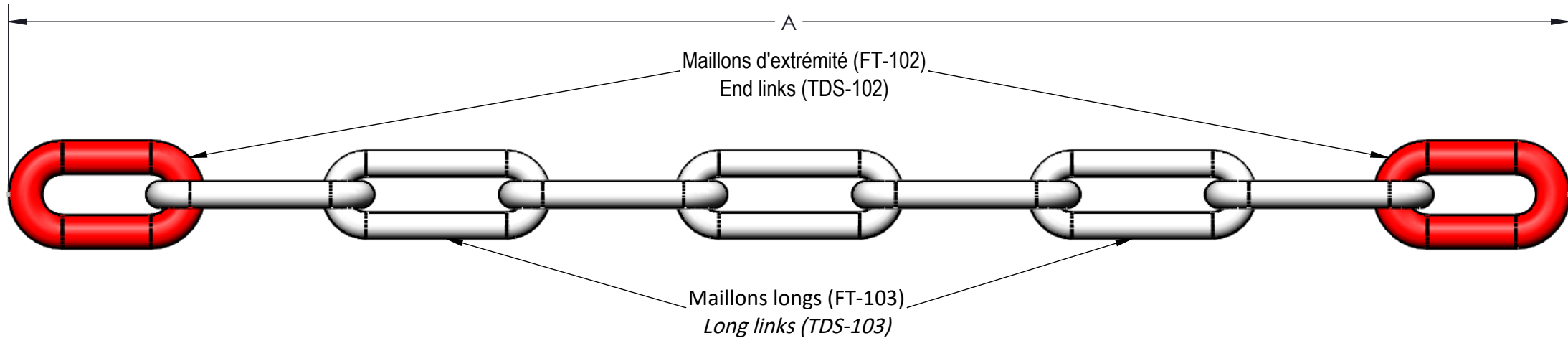
Asset - Actif

Drawing - Dessin

FT-401
TDS-401

Chaîne à maillons standards /
Standard link chain

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:6
drawing no. - no. dessin	sheet-feuille
401	1 / 1
	rev
	1



Chaîne à maillons longs / Long link chain

No. Catalogue / Catalog No.	Masse / Mass (kg)	Maillon long / Long link	Maillons d'extrémité / End links	A (m)	Charges d'épreuve et de rupture pour l'acier Grade U3 / Proof and breaking loads for Grade U3 steel (kN)		
					Charge d'utilisation / Safe working load	Charge d'épreuve / Proof load	Charge de rupture / Breaking load
CN-402-18.5-14	60.0	103-14	102-18	18.5	33	115	165
CN-402-18.5-20	127.2	103-20	102-20		67	233	333
CN-402-18.5-26	209.6	103-26	102-24		111	389	556
CN-402-18.5-32	325.7	103-32	102-32		166	583	832
CN-402-18.5-38	436.3	103-38	102-38		232	812	1160
CN-402-27.5-14	89.2	103-14	102-18	27.5	33	115	165
CN-402-27.5-20	189.1	103-20	102-20		67	233	333
CN-402-27.5-26	311.6	103-26	102-24		111	389	556
CN-402-27.5-32	484.1	103-32	102-32		166	583	832
CN-402-27.5-38	648.5	103-38	102-38		232	812	1160

Notes de dimensions / Dimensional notes :

- La chaîne est disponible en deux différentes longueurs (dimension A)
The chain is available in two different lengths (dimension A)

Notes de matériaux / Material notes :

- Tous les composants d'amarrage doivent être conformes à leur FT
All mooring components must conform to their TDS

POUR SOUMISSION
FOR QUOTATION

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin
FT-402
TDS-402

Chaîne à maillons longs / Long link chain

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:3
drawing no. - no. dessin	sheet-feuille
402	1 / 1
	rev
	1



Maillons d'extrémité (FT-102)
End link (TDS-102)

Maillons standards (FT-101)
Standard link (TDS-101)

Anneau de bride (FT-104)
Bridle ring (TDS-104)

Ensemble de d'Émerillon (FT-301)
Swivel assembly (TDS-301)

Maillons d'extrémité (FT-102)
End links (TDS-102)

DETAIL A
ÉCHELLE / SCALE 1 : 16.5

No. Catalogue / Catalog No.	A (m)	Sous-ensembles / Sub-assemblies						
		Maillon standard / Standard link	Maillon d'extrémité / End link		Anneau de bride / Bridle ring		Émerillon / Swivel	
			No. Pièce / Part No.	QTY.	No. Pièce / Part No.	QTY.	No. Catalogue / Catalog No.	QTY.
CN-501-2.5-20	2.5	101-20	102-24	6	104-28	1	CN-301-24	1
CN-501-3.0-28	3.0	101-28	102-34	6	104-39	1	CN-301-34	1
CN-501-3.5-26	3.5	101-26	102-32	6	104-36	1	CN-301-32	1
CN-501-3.5-28	3.5	101-28	102-34	6	104-39	1	CN-301-34	1
CN-501-3.5-32	3.5	101-32	102-38	6	104-45	1	CN-301-38	1
CN-501-4.0-38	4.0	101-38	102-46	6	104-53	1	CN-301-46	1
CN-501-4.5-28	4.5	101-28	102-34	6	104-39	1	CN-301-34	1
CN-501-4.5-32	4.5	101-32	102-38	6	104-45	1	CN-301-38	1

Dimensions :

- Les tolérances de dimensions / *Dimensions tolerances* : $\pm 2.5 \%$

Notes de matériaux / Material notes :

- Les deux chaînes de la bride doivent avoir la même longueur et le même nombre de maillons standards.

The two bridle legs must have the same length and same number of standard links.

- La bride doit contenir un nombre impair de maillons standards

The bridle must contain an odd number of standard links

- La bride doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.

The bridle must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.

- Tous les composants d'amarrage doivent être conformes à leur FT

All mooring accessories must conform to their TDS

POUR SOUMISSION
FOR QUOTATION

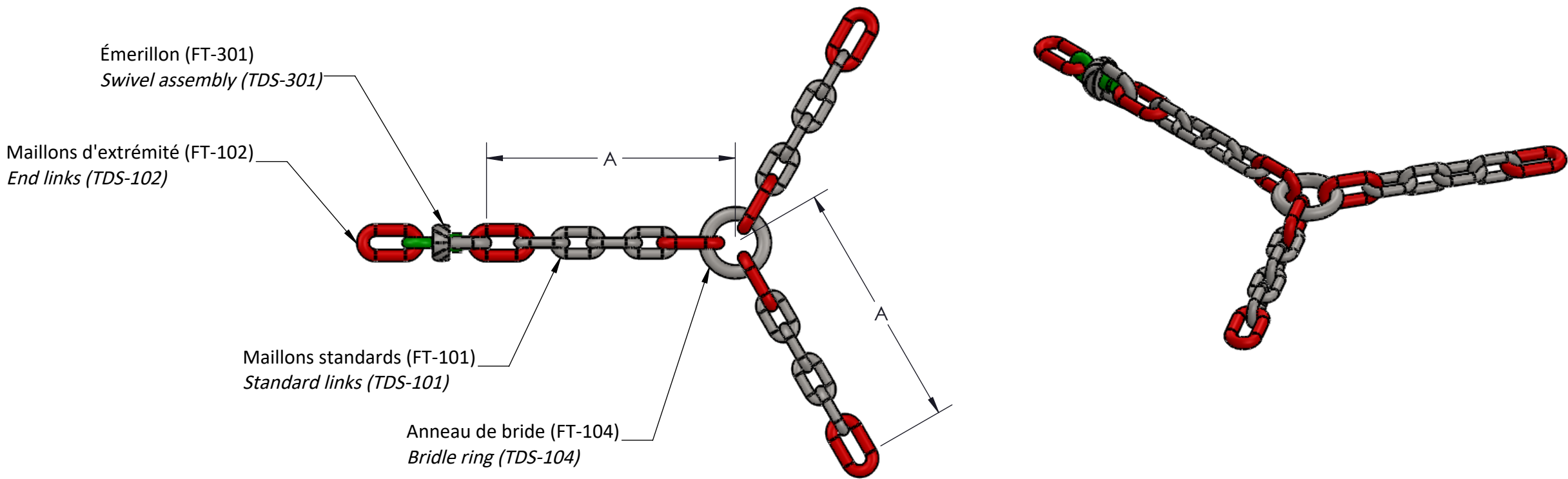
1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin
FT-501
TDS-501

Bride en V / V bridle

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:33.3
drawing no. - no. dessin	sheet-feuille
501	1 / 1
	rev
	1



No. Catalogue / Catalog No.	A (m)	Sous-ensembles / Sub-assemblies						
		Maillon standard / Standard link	Maillon d'extrémité / End Link		Anneau de bride / Bridle ring		Émerillon / Swivel	
			No. Pièce / Part No.	QTY.	No. Pièce / Part No.	QTY.	No. Catalogue / Catalog No.	QTY.
CN-502-2.5-20	2.5	101-20	102-24	7	104-28	1	301-24	1
CN-502-3.0-26	3.0	101-26	102-32	7	104-36	1	301-32	1
CN-502-3.0-38	3.0	101-38	102-46	7	104-53	1	301-46	1
CN-502-4.0-38	4.0	101-38	102-46	7	104-53	1	301-46	1
CN-502-4.5-32	4.5	101-32	102-38	7	104-45	1	301-38	1

Dimensions :

- Les tolérances de dimensions / Dimensions tolerances : $\pm 2.5 \%$

Notes de matériaux / Material notes :

- Les trois chaînes de la bride doivent avoir la même longueur et le même nombre de maillons standards.
The three bridle legs must have the same length and same number of standard links.
- La bride doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.
The bridle must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.
- Tous les composants d'amarrage doivent être conformes à leur FT
All mooring accessories must conform to their TDS

POUR SOUMISSION
FOR QUOTATION

1	Updated for TSoR 6th Edition	AS	2022-06-30
0	ORIGINAL	CAR	2021-06-30
rev	description	by par	date

Asset - Actif

Drawing - Dessin

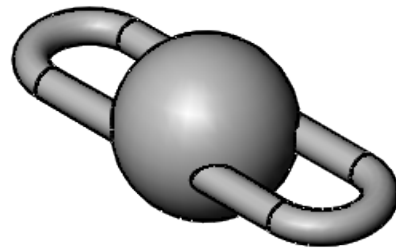
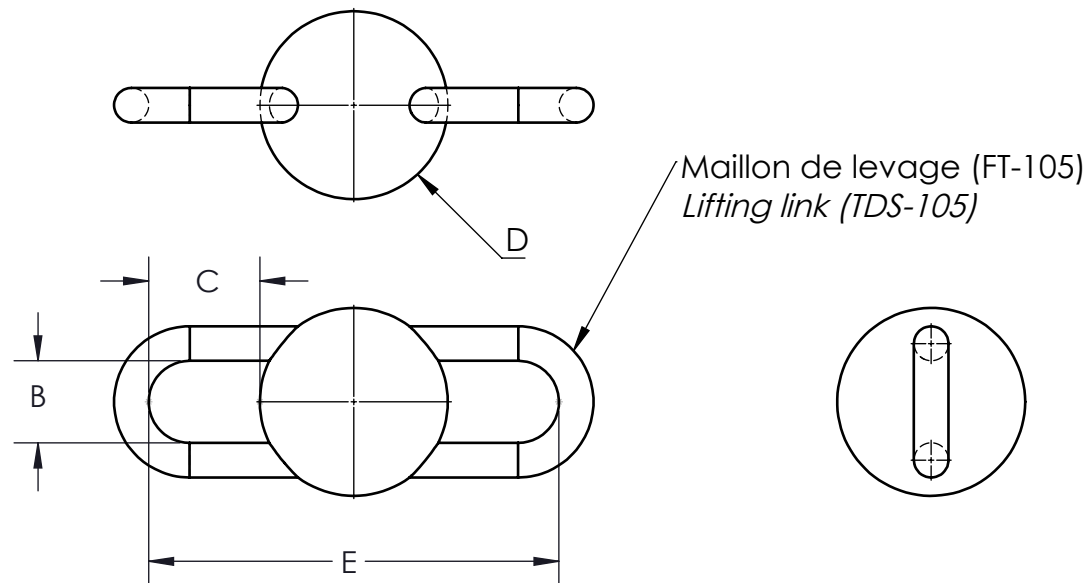
FT-502
TDS-502

Bride en Y / Y bridle

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériau	scale - échelle
Acier / Steel U3	1:15
drawing no. - no. dessin	sheet-feuille
502	1 / 1
	rev
	1



Vendor / Sous-traitant



No. Catalogue / Catalog No.	Poids / Weight (kg)	No. Maillon de levage / Lifting link No.	Dimensions (mm)			
			B	C	D (ref)	E
CN-701-025	25	105-32	76	103.0	174	380
CN-701-050	50			75.0	230	
CN-701-075	75	105-44	100	156.5	252	565
CN-701-100	100			140.0	285	
CN-701-200	200			97.5	370	

Notes of dimensions/dimensions:

- Tolérances / Tolerances

Dimensions de la barre / Bar dimensions : + 5 %, - 0 %

Tolérance de poids / Weight tolerance : + 5 %, - 2.5 %

Autres dimensions / Other dimensions : $\pm 2,5\%$

Notes :

- Le maillon de levage (FT-105) doit être fait en matériaux conformes aux normes du Lloyd's Register pour l'acier laminé Grade U3.

The lifting link (TDS-105) must be made of materials meeting Lloyd's Register standards for Grade U3 rolled steel.

- Les contrepoids doivent être en fonte.

Counterweights must be made of cast iron.

- Note A : L'année de fabrication, le numéro de fabricant (XXXXX), le numéro de lot (XXXX). Tous ces détails doivent être inscrits en lettrage en relief de 25 mm de hauteur.

The year of manufacture, manufacturer's number (XXXXX), the batch number (XXXX). All these details must be entered in 25 mm high relief lettering.

- Note B : Le poids en kilogrammes (XXXX kg), lettrage en relief, 50 mm de hauteur.

The weight in kilograms (XXXX kg), embossed lettering, 50 mm high.

- Tous les dimensions doit être symétriques à partir des lignes de centre.

All dimensions should be symmetrical from the center lines.

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rev	description	by par	date

Asset - Actif

Drawing - Dessin

FT-701
TDS-701

Contrepoids / Counterweight

designed - conception	date
DesignBy	yyyy-mm-dd
drawn - dessiné	date
Amrith Senaratne	2022-06-30
checked - vérifié	date
NF and GSP	2022-07-12
approved - approuvé	date
Pierre-Luc Delage	2022-07-14
material - matériel	scale - échelle
	1:7
drawing no. - no. dessin	sheet-feuille
701	1 / 1
	rev
	1