

www.denverrope.com

For customer service and inquiries please call John 303-809-7274 or email john@denverrope.com.

Please email the completed worksheet back to John of Denver Rope or can fax to 305-635-0530 attention Cari Valdes – Denver Rope.

Tow Bridle / Tow Line Worksheet

- Working Load: For Ocean and Commercial Towing Application the W.L. is chosen to be equal to the fully loaded weight of the towed vessel. For light duty / pleasure marine / lake applications the W.L. is often chosen to be 1/3 – 1/2 the fully loaded weight of the towed vessel.
- Denver Rope is always concerned as not to exceed a customer's budget. However, it is always better to error on the conservative side when specifying a Tow Bridle / Tow Line.
- Use sections C-F to specify a single leg tow line / mooring pendant / other.
- Please fill out this worksheet the best you can and return to Denver Rope. Thank you.

Please describe below your towing vessel and the towed vessel below. Include weight, location, etc.

Please describe below what you are specifying on this worksheet; Y tow bridle, single leg tow line, mooring pendant, hawser line, anchor line, mooring line, other.





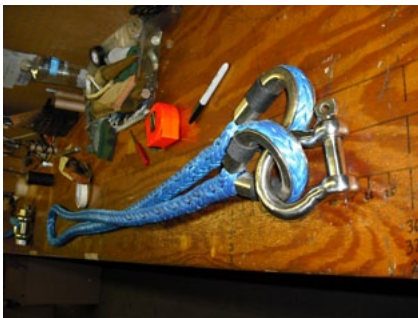
36" Covered Eye Splice



Y-Point with stern legs to the right and tow leg the left



Tow Leg with a Safety Bolted Shackle



Snubber with Bow Shackle



Swivel Eye Hook and Bow Shackle

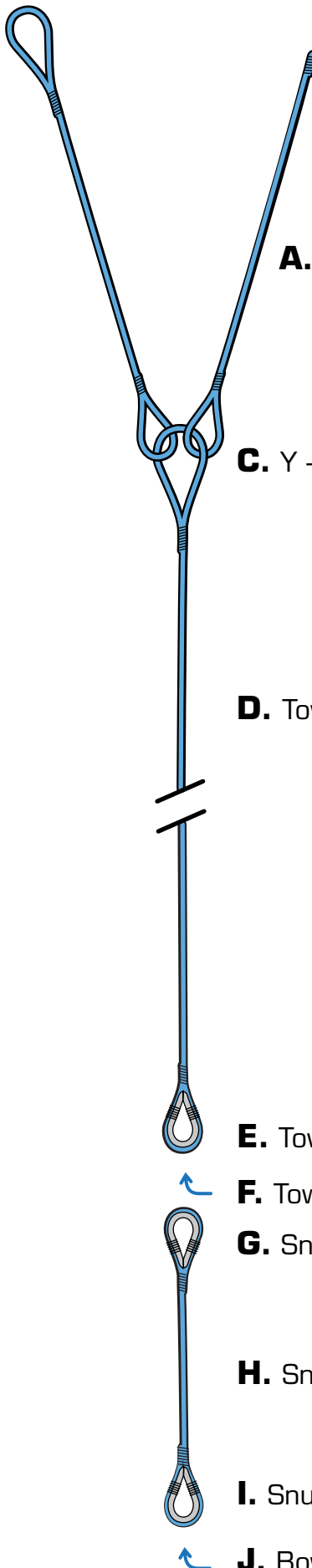


Quick Release Snap Shackle



Trigger Release Shackle

B2. Eye Splices are hand sewn, whipped, and made-to-order



B1. Bitter Ends melted clean, whipped, and hand sewn

A. Stern Legs

C. Y — Point Connection

D. Tow Leg



Optional Lock-On Rope Floats

E. Tow Leg Connection

F. Tow Leg/Bow Hardware

G. Snubber Connection — Tow Leg End

H. Snubber

I. Snubber Connection — Bow

J. Bow Hardware

A. Stern Bridle Legs

- 1. Specify Length _____ (2x the Beam is standard)
- 2. Specify Material _____ (double braid nylon is standard)

We will assist the customer in selecting the diameter of rope that matches the W.L. of the line.

B. Stern Connection (choose between 1 or 2 below)

- 1. Specify Bitter Ends _____ (y/n - standard)
- 2. Specify Eye Splice _____ (y/n – customer specified below)
 - a. Eye Splice Size _____ (18”, 24” are typical)
 - b. Chafe Guard _____ (y/n - covered eyes are recommended)

C. Y-Point Connection (choose between 1 or 2 below)

- 1. Specify Small Covered Eye Splices _____ (y/n – standard - recommended)
 - a. Eye Splice Size _____ (9”, 12”, 18”, 24” are typical)
 - b. Chafe Guard _____ (y/n - covered eyes are recommended)
- 2. Hardware Connection _____ (y/n - customer specified below)

Some customers may want to disassemble their tow bridle at the Y-Point. Therefore, choose from a combination of the following stainless steel hardware; thimbles, bow or bolted shackles, quick release snap shackles, trigger release shackles, and or a master link. As the working load of the tow bridle increases, the price of this hardware accelerates.

D. Tow Leg

- 1. Specify Length _____ (1-3x the length of towing vessel - customer specified)
- 2. Specify Material _____ (customer specified)

We will assist the customer in selecting the diameter of rope that matches the W.L. of the line.

Choose double braid nylon for smaller working loads typically equating to rope not much more than 3/4” to 1-0” in diameter. For larger working loads switch rope material to high performance 12-strand dyneema rope as it is much lighter, stronger, and it floats.

* Note: Can add optional rope floats to parts A and or D. Most Often for Outboard Applications*

E. Tow Leg Connection (choose between 1 or 2 below)

- 1. Hard Eye _____ (y/n - standard)
 - a. Light Duty s/s Thimble _____ (std for recreational lake applications)
 - b. Heavy Duty s/s Thimble _____ (std for commercial and ocean applications)
- 2. Soft Eye _____ (y/n – customer specified below)
 - a. Eye Splice Size _____ (18”, 24” are typical)
 - b. Chafe Guard _____ (y/n - covered eyes are recommended)

F. Tow Leg / Bow Hardware (choose from stainless steel hardware listed below)

- 1. Bow Shackle _____ (y/n)
- 2. Bolted Safety Shackle _____ (y/n)
- 3. Swivel Eye Hook _____ (y/n)
- 4. Quick Release Snap Shackle _____ (y/n)
- 5. Trigger Release Shackle _____ (y/n)
- 6. Omit Hardware Connection _____ (y/n, typ if E2 selected and single legged)

We will assist the customer in selecting the hardware that matches the W.L. of the line.

*** Denver Rope Optional Item – Snubber Line ***

A snubber line is utilized when the towed vessel has a large freeboard making it difficult to reach and disconnect the tow leg from the bow area.

G. Snubber Connection - Tow Leg End (choose between 1 or 2 below)

- 1. Hard Eye _____ (y/n - standard)
 - a. Light Duty s/s Thimble _____ (std for recreational lake applications)
 - b. Heavy Duty s/s Thimble _____ (std for commercial and ocean applications)
- 2. Soft Eye _____ (y/n – customer specified below)
 - a. Eye Splice Size _____ (18”, 24” are typical)
 - b. Chafe Guard _____ (y/n - covered eyes are recommended)

A soft eye is chosen if the towed vessel is put underway with the snubber still attached.

H. Snubber Leg

- 1. Specify Length _____ (10ft is typical – customer specified)
- 2. Specify Material _____ (same material and diameter as tow leg - std)

I. Snubber Connection – Bow (choose between 1 or 2 below)

- 1. Hard Eye _____ (y/n - standard)
 - a. Light Duty s/s Thimble _____ (std for recreational lake applications)
 - b. Heavy Duty s/s Thimble _____ (std for commercial and ocean applications)
- 2. Soft Eye _____ (y/n – customer specified below)
 - a. Eye Splice Size _____ (18”, 24” are typical)
 - b. Chafe Guard _____ (y/n - covered eyes are recommended)

J. Bow Hardware (choose from stainless steel hardware listed below)

- 1. Bow Shackle _____ (y/n)
- 2. Bolted Safety Shackle _____ (y/n)
- 3. Swivel Eye Hook _____ (y/n)
- 4. Quick Release Snap Shackle _____ (y/n)
- 5. Trigger Release Shackle _____ (y/n)



Swivel Eye Hook and Bow Shackle



Quick Release Snap Shackle



Trigger Release Shackle

We will assist the customer in selecting the hardware that matches the W.L. of the line.

For Y-Y Tow Bridle Application, replace the Snubber Leg with a Bow Bridle Assembly (bow bridle legs). Replace steps G-J and repeat steps A-C for the Bow Bridle design elements. The Snubber Leg becomes a Bow Bridle Assembly.

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DENVER ROPE - Y-BRIDLE STRENGTH GUIDE

The Best Custom Boat Lines, Custom Colored Ropes, & Special Assemblies made to Your Specifications

NYLON DOUBLE BRAID (DBN) Single Leg Tow Hawser				DBN Y-Bridle Configuration with each bridle leg at least 2x the boat's beam (min)		12-STRAND DYNEEMA Single Leg Tow Line to Join the Bridle Legs				S/S Bow Shackle	S/S Safety Bolted Shackle	GALV Safety Bolted Shackle	Quick Release Snap Shackle	Trigger Release LB Shackle	Wire Rope or HD Thimble
Diameter		Tensile	WLL 5:1	Tensile	WLL 5:1	Diameter		Tensile	WLL 5:1						
inches	mm	pounds	pounds	pounds	pounds	inches	mm	pounds	pounds						
1/2"	13	7,300	1,460	12,167	2,433	5/16"	8	12,300	2,460	1/2"	1/2"	7/16"	W2776	T12	Reqd
5/8"	16	14,600	2,920	24,333	4,867	3/8"	10	17,600	3,520	5/8"	5/8"	1/2"	W2776	T20	Reqd
3/4"	19	19,000	3,800	31,667	6,333	1/2"	13	30,600	6,120	1-0"	3/4"	5/8"	W2777	T20	Reqd
7/8"	22	28,100	5,620	46,833	9,367	5/8"	19	47,500	9,500	1-1/4"	7/8"	3/4"	W2778	T30	Reqd
1-0"	25	33,200	6,640	55,333	11,067	3/4"	19	58,000	11,600		1-0"	7/8"	W2778	T30	Reqd
1-1/4"	32	52,000	10,400	86,667	17,333	7/8"	22	81,700	16,340		1-1/4"	1-0"		T30 T40	Reqd
1-1/2"	38	74,000	14,800	123,333	24,667	1-0"	25	98,100	19,620		1-1/4"	1-1/8"		T40	Reqd
1-5/8"	41	92,100	18,420	153,500	30,700	1-1/4"	32	149,000	29,800			1-1/4"		T50	Reqd
1-3/4"	45	109,500	21,900	182,500	36,500	1-1/2"	38	205,000	41,000			1-1/2"		T50	Reqd
2-0"	51	129,700	25,940	216,167	43,233	1-1/2"	38	205,000	41,000			1-1/2"			Reqd
2-1/4"	57	179,400	35,880	299,000	59,800	1-3/4"	45	302,000	60,400			1-3/4"			Reqd
2-1/2"	64	196,000	39,200	326,667	65,333	2-0"	51	343,000	68,600			2-0"			Reqd
2-5/8"	67	221,000	44,200	368,333	73,667	2-0"	51	343,000	68,600			2-0"			Reqd
2-3/4"	70	237,000	47,400	395,000	79,000	2-1/8"	56	411,000	82,200						Reqd
3-0"	76	274,000	54,800	456,667	91,333	2-1/4"	57	484,000	96,800						Reqd
3-1/4"	83	339,000	67,800	565,000	113,000	2-1/2"	64	529,000	105,800						Reqd

These figures are for brand new rope. Age, wear, sunlight exposure, splices, and fraying will further reduce these figures over time

All hardware sizing is approximate where thimble size and rope thickness may require a larger shackle to fit properly

Heavy Duty Towing Thimbles are available to include NEWCO, Blue Line, NAVSEA, GN Rope Fittings, Rope Connectors, etc.

We also supply towing plates, wire rope assemblies, stud link chain, and additional hardware as required

Additional fiber and rope construction styles are available

When the bridle legs are 2x the length of the beam, the inside angle formed by the legs is very acute and the bridle leg strengths are additive

The inside bridle leg angle shall be 60deg or less where 30deg is very acute, but not to exceed 90deg

Most conservative is to approximately match the single leg strengths (DBN - Dyneema) and design the inside bridle leg angle to be acute

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