



NAVTEC[®]

The Rigging Solution of Lewmar Marine

Fiber Systems | Rod Systems | Wire Systems | Hardware | Hydraulics

The image shows a group of people on the deck of a sailboat. They are leaning over the side, looking down at something in the water. The boat is white and has a black railing. The background is a clear blue sky and a calm sea. The NAVTEC logo is in the top left corner.

NAVTEC®

The trusted rigging solution of choice for cruising, racing, and superyachts

A heritage of proven performance and reliability has been tested to the extreme by generations of America's Cup contenders, the results of which are applied to the entire Navtec Range. Cutting edge research and component technology combine with a close attention to detail, resulting in a durable, high quality rigging solution.

From your initial enquiry, through manufacture and installation, to sailing in the field, the Navtec Sales Team offers you technical guidance and support. Drawing upon the expertise of the Navtec Research & Development Team and the Navtec Engineering Team, your dedicated Sales Advisor will ensure that you specify the most suitable product for the application. Following installation, a global service network and a three year warranty ensures that you will receive assistance, wherever you are in the world.

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Navtec Global Service

With a global network of factory and repair locations, and factory-authorised independent service agents, Navtec offers after sales support wherever you are in the world. To identify your local Navtec contact, please go to www.navtec.net and click on Contact Us.

Navtec Part Numbers

Imperial Part Numbers:

All measurements are in 32^{nds} of an inch

C550-172020

[C550]-[17] [20] [20]

[Model ID] – [Rod/Wire Size] [Thread Size] [Pin Size]

Metric Part Numbers:

The measurement following the M is in millimeters.
All further measurements are in 32^{nds} of an inch

N555-M1224

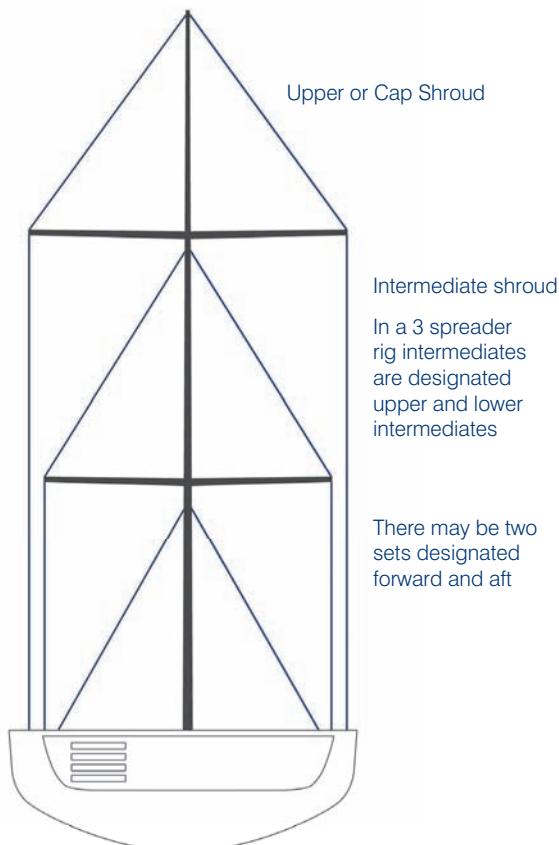
[N555] – [M] [12] [24]

[Model ID] – [Metric] [Rod/Wire Size] [Thread Size]

Rigging types

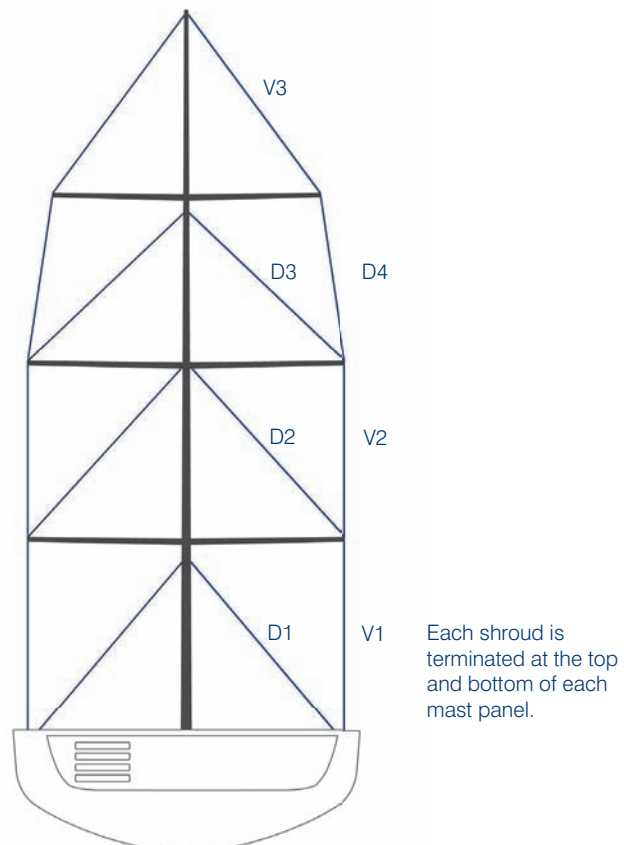
Continuous Rod, Wire, and Fiber Rigging

Continuous rigging consists of a set of shrouds which pass from the top of the mast, over the spreader tips to the deck without termination. This enables simple spreader design, effortless installation, and straightforward tuning adjustment at deck level. An overall high standard of aesthetic appeal, strength, durability, and ease of use means that Navtec continuous systems are favoured by many production boat builders. Navtec continuous systems are available in fiber, Nitronic 50 Rod, and wire rigging. Navtec continuous fiber systems are particularly efficient due to the ability to tailor the diameter of the shroud to match the decreasing loads aloft.



Discontinuous Rigging

Discontinuous rigging is based upon the principle of one stay between each span, linked by tip cups, special links, or spreader terminations. Each span is fitted with the appropriate size wire or rod for the load, reducing windage and the overall weight of the rig. Tuning is carried out at deck and spreader level, with shorter length spans resulting in less stretch in each stay. Navtec discontinuous systems are available in Navtec stainless rod rigging or Z-System fiber rigging, with marine eye, lashing eye, or biconic terminations. Individual shroud sections provide ease of repair or replacement. Navtec discontinuous systems are the preferred choice of performance racing boats and superyachts.



Wire Rigging

1x19 Stainless Steel Wire (Standard Rigging) Dimensions & Part Numbers

PART NUMBER	NOMINAL DIAMETER		MINIMUM BREAKING LOAD		APPROXIMATE WEIGHT		STRETCH	
	mm	in	kg	lbs	kg/100m	lb/100ft	mm/mm/1000kg	in/in/1000lb
S19-M02	2	-	320	705	1.95	1.31	0.028961	0.0131642
S19-M025	2.5	3/32	500	1100	3.05	2.05	0.018535	0.0084251
S19-M03	3	-	720	1590	4.49	3.02	0.012872	0.0058510
S19-04	-	1/8	720	1590	4.49	3.02	0.012872	0.0058510
S19-M04	4	5/32	1280	2820	7.81	5.25	0.007378	0.0033537
S19-06	-	3/16	1800	3970	10.6	7.12	0.005080	0.0023091
S19-M05	5	-	2000	4400	12.2	8.20	0.004627	0.0021032
S19-07	-	7/32	2470	5440	15.1	10.1	0.003744	0.0017018
S19-M06	6	-	2880	6350	17.6	11.8	0.003224	0.0014655
S19-08	-	1/4	3220	7100	19.4	13.0	0.002873	0.0013059
S19-M07	7	9/32	3550	7800	23.9	16.1	0.002274	0.0010336
S19-M08	8	5/16	4640	10300	31.2	21.0	0.001833	0.0008332
S19-12	-	3/8	6580	14500	43.2	29.0	0.001277	0.0005805
S19-M10	10	-	7250	16000	48.8	32.8	0.001157	0.0005259
S19-M11	11	7/16	8770	19340	59.1	39.7	0.000936	0.0004255
S19-M12	12	-	10400	22930	70.3	47.2	0.000806	0.0003664
S19-16	-	1/2	11650	25680	79.3	53.3	0.000718	0.0003264
S19-M14	14	9/16	14180	31260	95.7	64.3	0.000566	0.0002573
S19-M16	16	5/8	18560	40920	125	84.0	0.000460	0.0002091
S19-M19	19	3/4	21620	47660	176	118	0.000319	0.0001450
S19-M22	22	7/8	29070	64090	236	159	0.000235	0.0001068
S19-M26	26	1	40600	89500	330	222	0.000180	0.0000818
S19-M28	28	1 1/8	52600	115960	383	257	0.000142	0.0000645
S19-M30	30	1 3/16	58800	129600	443	298	0.000127	0.0000577
S19-M32	32	1 1/4	62800	138450	500	336	0.000115	0.0000523

Dyform Wire

PART NUMBER	NOMINAL DIAMETER mm	CONSTRUCTION	MINIMUM BREAKING LOAD		APPROXIMATE WEIGHT		STRETCH	
			kg	lbs	kg/100m	lb/100ft	mm/mm/1000kg	in/in/1000lb
SD07-M025	2.5	1 x 7	690	1521	3.40	2.28	0.014523	0.0066014
SD07-M03	3	1 x 7	1000	2205	4.90	3.29	0.010085	0.0045841
SD07-M035	3.5	1 x 7	1350	2976	6.70	4.50	0.007410	0.0033682
SD07-M04	4	1 x 7	1780	3924	8.80	5.91	0.005673	0.0025787
SD19-M05	5	1 x 19	2440	5379	13.50	9.07	0.003728	0.0016946
SD19-M06	6	1 x 19	3550	7826	19.40	13.04	0.002589	0.0011768
SD19-M07	7	1 x 19	4910	10825	26.00	17.47	0.001902	0.0008646
SD19-M08	8	1 x 19	6150	13558	34.50	23.18	0.001456	0.0006618
SD19-M10	10	1 x 19	9770	21539	54.00	36.29	0.000932	0.0004236
SD19-M12	12	1 x 19	14400	31747	80.70	54.23	0.000647	0.0002941
SD25-M14	14	1 x 25	19300	42549	115.00	77.28	0.000476	0.0002164
SD25-M16	16	1 x 25	25600	56438	147.00	98.78	0.000364	0.0001655
SD31-M19	19	1 x 31	32000	70548	207.00	139.10	0.000258	0.0001173

Fiber Rigging

PBO Fiber Cable

SIZE	COVER DIAMETER		MINIMUM BREAKING STRENGTH		WEIGHT		STRETCH EQUIVALENT	
	mm	in	kg	lbs	kg/m	lb/ft	N-50 Rod	1x19 Wire
5.3T	8.0	0.315	5,300	11,700	0.050	0.034	-8	7mm, 9/32
8.7T	10.0	0.394	8,700	19,200	0.076	0.051	-12	8mm, 5/16
12.4T	11.8	0.465	12,400	27,300	0.112	0.075	-17	11mm, 7/16
16T	13.1	0.516	16,000	35,300	0.135	0.091	-22	12mm
21T	15.0	0.591	21,000	46,300	0.176	0.118	-30	14mm, 9/16
27T	16.8	0.661	27,000	59,500	0.224	0.151	-40	16mm, 5/8
35T	19.2	0.756	35,000	77,200	0.285	0.192	-48	19mm, 3/4
45T	22.0	0.866	45,000	99,200	0.376	0.253	-60	22mm, 7/8
57T	23.6	0.929	57,000	125,700	0.471	0.317	-76	22mm, 7/8
71T	26.2	1.031	71,000	156,600	0.577	0.388	-91	26mm, 1
88T	28.7	1.130	88,000	194,000	0.693	0.466	-115	28mm, 1-1/8
110T	31.8	1.252	110,000	242,600	0.852	0.573	-150	32mm, 1-1/4

Aramid Fiber Cable

SIZE	COVER DIAMETER		MINIMUM BREAKING STRENGTH		WEIGHT		STRETCH EQUIVALENT	
	mm	in	kg	lbs	kg/m	lb/ft	N-50 Rod	1x19 Wire
3T	8.0	0.315	3,000	6,600	0.027	0.018	na	3/16
3.8T	8.5	0.335	3,800	8,400	0.055	0.037	-4	5mm
5T	10.0	0.394	5,000	11,000	0.075	0.050	-6	6mm
7T	12.0	0.472	7,000	15,400	0.107	0.072	-8	7mm, 9/32
9T	13.1	0.516	9,000	19,800	0.127	0.085	-10	8mm, 5/16
12T	15.0	0.591	12,000	26,500	0.166	0.112	-12	3/8
15T	16.8	0.661	15,000	33,100	0.209	0.140	-17	10mm
20T	19.1	0.752	20,000	44,100	0.271	0.182	-22	12mm
25T	22.0	0.866	25,000	55,100	0.359	0.241	-30	14mm, 9/16
31T	25.0	0.984	31,000	68,400	0.465	0.313	-40	16mm, 5/8
43T	28.7	1.130	43,000	94,800	0.611	0.411	-48	19mm, 3/4
54T	32.3	1.272	54,000	119,100	0.775	0.521	-60	22mm, 7/8
75T	39.9	1.571	75,000	165,400	1.183	0.795	-91	26mm, 1
90T	42.6	1.677	90,000	198,500	1.347	0.905	-115	28mm, 1-1/8
150T	56.6	2.228	150,000	330,800	2.310	1.553	-150	32mm, 1-1/4
300T	77.2	3.039	300,000	661,500	4.240	2.850	-320	-

Rod Rigging

Nitronic 50 Rod

ROD SIZE	PART NUMBER	DIAMETER			MINIMUM BREAKING STRENGTH		WEIGHT		STRETCH	
		NOMINAL		+/-	kgs	lbs	kg/m	lb/ft	mm/mm/1000kg	in/in/1000lb
		mm	in							

Nitronic 50 Coil (1)

-4	R505-004	4.37	0.172	0.001	2,130	4,700	0.118	0.079	0.004	0.002
-6	R505-006	5.03	0.198	0.001	2,860	6,300	0.156	0.105	0.003	0.001
-8	R505-008	5.72	0.225	0.001	3,720	8,200	0.202	0.136	0.002	0.001
-10	R505-010	6.35	0.250	0.001	4,670	10,300	0.249	0.167	0.002	0.001
-12	R505-012	7.14	0.281	0.001	5,670	12,500	0.314	0.211	0.001	0.001
-15	R505-015	7.52	0.296	0.001	6,460	14,250	0.349	0.235	0.001	0.001
-17	R505-017	8.38	0.330	0.001	7,940	17,500	0.434	0.291	0.001	0.000
-22	R505-022	9.53	0.375	0.001	10,200	22,500	0.560	0.376	0.001	0.000
-30	R505-030	11.10	0.437	0.001	13,600	30,000	0.761	0.511	0.001	0.000
-40	R505-040	12.70	0.500	0.002	17,200	38,000	0.996	0.669	0.000	0.000
-48	R505-048	14.27	0.562	0.002	21,800	48,000	1.258	0.845	0.000	0.000
-60	R505-060	16.76	0.660	0.002	27,200	60,000	1.735	1.166	0.000	0.000
-76	R508-076	17.91	0.705	0.002	34,500	76,000	1.980	1.330	0.000	0.000

Nitronic 50 Bar (Gamma) (2)

-76	R508-P-076	17.91	0.705	0.002	34,500	76,000	1.980	1.330	0.000	0.000
-91	R508-P-091	19.51	0.768	0.002	40,800	90,000	2.349	1.579	0.000	0.000
-115	R508-P-115	22.23	0.875	0.002	52,200	115,000	3.049	2.049	0.000	0.000
-150	R508-P-150	25.40	1.000	0.002	68,000	150,000	3.983	2.677	0.000	0.000
-170	R508-P-170	27.08	1.066	0.002	77,100	170,000	4.526	3.042	0.000	0.000
-195	R508-P-195	28.58	1.125	0.002	86,200	190,000	5.041	3.388	0.000	0.000
-220	R508-P-220	30.25	1.191	0.002	98,400	217,000	5.650	3.797	0.000	0.000
-260	R508-P-260	33.35	1.313	0.002	118,000	260,000	6.866	4.614	0.000	0.000
-320	R508-P-320	38.10	1.500	0.002	145,000	320,000	8.961	6.022	0.000	0.000
-400	R508-P-400	44.45	1.750	0.002	181,000	400,000	12.197	8.197	0.000	0.000
-540	R508-P-540	50.80	2.000	0.002	245,000	540,000	15.933	10.707	0.000	0.000
-640	R508-P-640	57.15	2.250	0.002	291,000	640,000	20.254	13.598	0.000	0.000

1. Rod sizes up through -91 are available in coil form or straightened in any length.
2. Standard sizes available up to 40ft. Contact Navtec for longer lengths.
3. Large sizes, especially -115 and above may be in stock in higher strengths than listed. Contact Navtec for details.



1. Fiber Rigging

For the past 30 years, Navtec has been at the forefront of yacht rigging. And for the past 20 years, we have been perfecting the performance of fiber rigging, offering the greatest combination of materials and terminations. As fiber technology constantly evolves, the Navtec Design Team continue to deliver innovative rig solutions.

A History of Design & Technical Excellence

Since 1986 and the introduction of Aramid soft and pultruded rigging products, Navtec has been at the forefront of advances in fiber rigging.

The introduction of Zylon® fiber, or PBO, in 1997 enabled Navtec's engineers to create rigging that is 50% stronger and 80% lighter than an N-50 stainless steel rigging assembly. Navtec led the way in the production of PBO fiber rigging with the use of unidirectional cables, initially with biconic terminations.

In 2002, Navtec undertook an extensive development programme to produce continuously wound unidirectional Zylon® cables, which resulted in Z-System PBO and an enhanced Aramid product. Nearly ten years on, the continuous drive to improve the performance of the system has ensured that the Z-System continues to be one of the most trusted rigging systems.

Recent development focus has resulted in the ultimate high-performance system – Continuous PBO. Navtec's propriety CNC winding and assembly processes continue to lead the fiber rigging field, while proven racing performance and test results make it the smartest choice for high-performance, lightweight fiber rigging.

We know that fiber is always changing, and Navtec is ready for what comes next.



SW 100 RS – Blues image courtesy of Southern Wind

Navtec Z-System PBO & Aramid Rigging

In 2003, Navtec identified the opportunity to achieve specific cable specifications dictated by customer and application and purchased a custom designed, filament winding machine to CNC wind continuous fiber tow (Aramid or PBO). Two years of testing and development resulted in a machine design that can maintain accuracy in both length (+/- 1mm) and specification. Not only can cables be produced that meet customer's specific requirements, but exact replacements can be manufactured at a later date.

Z-System cables can be ordered to equivalent rod or wire specifications, or by strength or stiffness requirements. As each Z-System cable is produced to its own specification, the length and fiber bundle can be accurately adjusted to suit any application.

When designing fiber rigging, the cable stiffness (EA) is typically matched to the equivalent Nitronic 50 rod in

order to maintain the original specification. Generally, Nitronic 50 is specified with a safety factor equal to 2.5 times the working load. The strength versus modulus ratio of the PBO fiber offers approximately 50% more strength than the Nitronic 50 rod, resulting in enhanced safety.

To produce a Z-System cable, PBO or Aramid fiber is placed under constant tension and is wound continuously around two thimbles a fixed distance apart. Once the desired amount of fiber is wound, the cable is covered with three layers of protection: compression tape, seal tape, and chafe-resistant braid. Each thimble has a carbon fiber cover applied to create the only sealed-end fitting in the industry. An adhesive-lined piece of heat shrink creates the seal between the cover and the mid-span of the cable, helping to prevent the strength degradation caused by UV light and moisture.



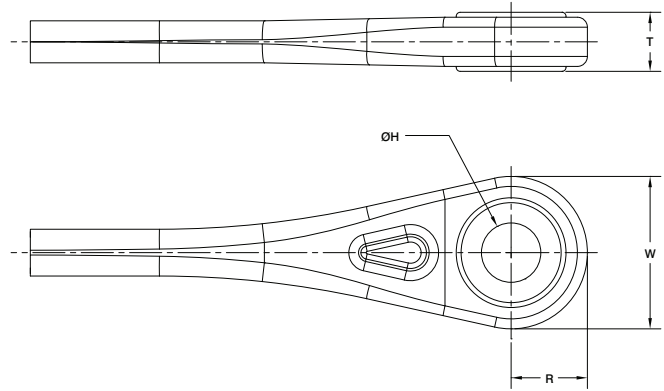
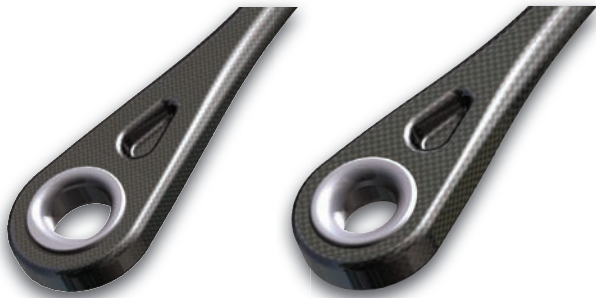
Grand Prix race performance with Navtec fiber rigging

Z System PBO End Fittings

After thorough testing, Navtec arrived at a carbon-covered termination as the lightweight and waterproof solution. We've developed several thimble designs in order to fit virtually any situation. Where a round thimble does not make sense, Navtec has the ability to apply a biconic terminal to create a Hybrid cable. This means that Navtec can use its vast library of threaded attachment designs for rod, wire, Aramid and PBO together to arrive at an efficient, cost effective solution for any requirement.

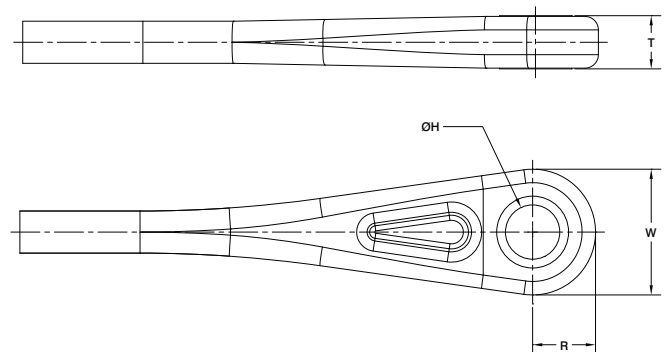
COVER SIZE	ROD EQUIVALENT	Z RANGE	TONNES (T)
A	-0 to -6	Z000 - Z004	0 - 3T
B	-6 to -12	Z004 - Z007	3T - 9.5T
C	-12 to -25	Z007 - Z016	9.5T - 21T
D	-25 to -50	Z016 - Z031	21T - 40T
E	-50 to -100	Z031 - Z058	40T - 74T
F	-100 to -220	Z058 - Z131	74T - 170T

R592-LE Lashing Eye Assembly



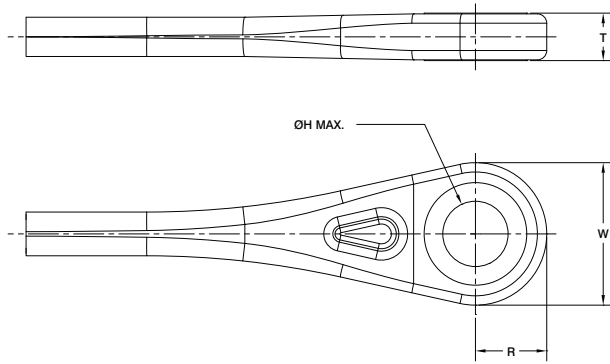
SIZE	H	T	W	R
A	0.39	0.34	1.06	0.53
B	0.63	0.59	1.44	0.72
C	0.74	0.72	1.91	0.95
D	1.21	0.89	2.93	1.46
E	1.32	1.28	3.49	1.75
F	2.19	1.71	5.55	2.77

R592-ME Marine Eye Assembly



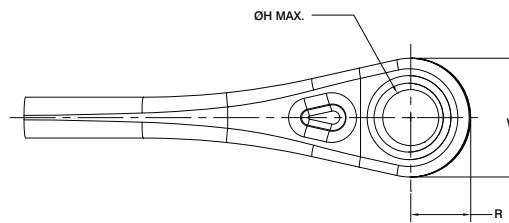
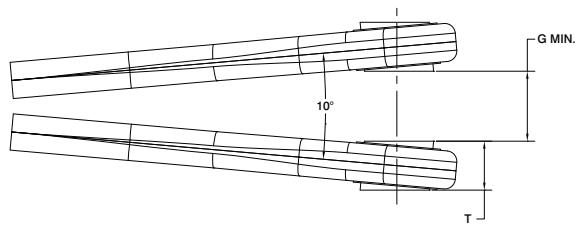
SIZE	H	T	W	R
A	0.44	0.39	1.00	0.50
B	0.63	0.60	1.25	0.63
C	0.76	0.72	1.75	0.88
D	1.13	1.10	2.38	1.19
E	1.38	1.35	3.13	1.56
F	2.13	2.10	4.25	2.13

R592-SE Spreader Eye Assembly



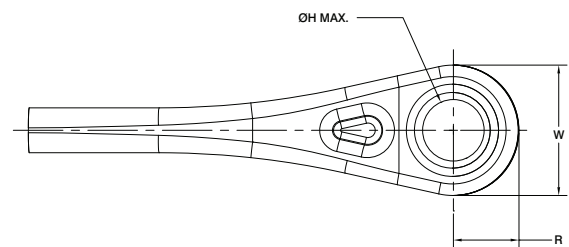
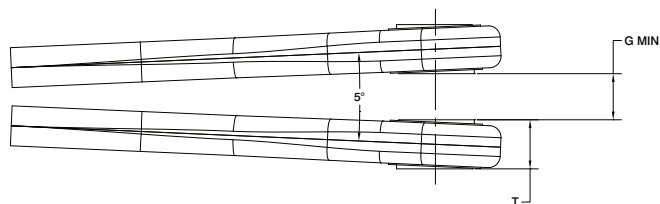
SIZE	H MAX	T	W	R
A	0.50	0.36	1.06	0.53
B	0.75	0.44	1.44	0.72
C	1.00	0.64	1.91	0.95
D	1.38	0.79	2.93	1.46
E	1.75	1.19	3.49	1.75
F	3.00	1.55	5.55	2.77

R592-SF Spreader Fork Assembly 10 Deg



SIZE	G	H	T	R	W
B	0.63	0.50	0.44	0.54	1.06
C	0.75	0.63	0.55	0.73	1.44
D	1.00	0.88	0.78	0.97	1.91
E	1.50	1.25	1.01	1.48	2.93
F	2.00	1.50	1.45	1.78	3.49

R592-SF Spreader Fork Assembly 5 Deg



SIZE	G	H	T	R	W
B	0.38	0.50	0.40	0.54	1.061
C	0.50	0.63	0.50	0.72	1.440
D	0.63	0.88	0.71	0.96	1.910
E	1.00	1.25	0.90	1.48	2.929
F	1.00	1.50	1.32	1.75	3.493

1. Fiber Rigging

C790-BPXX003 - C790-BPXX004 Sling Telescopic Turnbuckle

PART NUMBER	STROKE	WEIGHT*	PART NUMBER	STROKE	WEIGHT*
	in	lbs		in	lbs
C790-BP08T003	4.00	0.87	C790-BP08T004	4.00	0.52
C790-BP12T403	5.00	1.27	C790-BP12T404	5.00	0.88
C790-BP16T003	5.00	1.60	C790-BP16T004	5.00	1.15
C790-BP21T003	6.00	2.84	C790-BP21T004	6.00	1.98
C790-BP27T003	6.00	3.52	C790-BP27T004	6.00	2.65
C790-BP35T003	6.00	4.41	C790-BP35T004	6.00	3.55
C790-BP45T003	6.00	6.31	C790-BP45T004	6.00	4.84
C790-BP57T003	6.00	7.74	C790-BP57T004	6.00	6.27

*Weight does not include Eye (03) or Socket (04).
See C890 Tbk's on page 38 for BP eye dimensions and chainplate design information.



Custom Z System Covers and Thimbles

Navtec has designed a range of covers and thimbles for applications where more articulation is needed. All of our thimbles are FEA analyzed and sized for safety and performance.

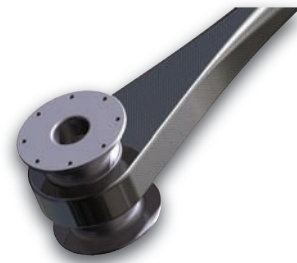
Uniball Eye



Custom Lashing Eye



Basket Loop



Barrel Pin Eye



Removable Cover for Headstay



Headstay Bearing



Navtec Biconic Aramid & PBO Rigging

Until the introduction of PBO, Navtec Aramid rigging was the industry standard. Over the years, it has undergone as much development as any Navtec rigging product. The biconic compression fitting was redesigned in 2001 to be more efficient in its connection to the pre-made unidirectional Aramid cables. The fittings are now stronger and safer than ever before, and Aramid continues to be a successful offering in our fiber rigging product line.

Navtec was the first company to introduce a biconic compression fitting to terminate PBO. We use titanium terminations to ensure the most efficient use of strength available in a PBO fiber bundle. Because of this, Navtec biconic terminations are the safest available, when compared to other PBO termination methods.

Navtec offers many standard sizes of pre-made cable to meet a number of application requirements. These consist of unidirectional Aramid or PBO fibers assembled in a way that minimizes the constructional stretch characteristics inherent in fiber cable production. The use of Navtec biconic fittings with our Aramid or PBO cable ensures a long lasting performance upgrade for any application.

One unique aspect of the cable design is the protective coating that is extruded around the fiber bundle during the cable manufacturing process. For PBO cables it is a glossy, dark grey cover, whereas the Aramid has a matte, grey cover (Aramid also available with white cover in certain sizes). This cover seals and protects the fiber bundle from the damaging effects of UV and moisture and also provides a high level of abrasion resistance, plus low windage.



Custom specified Navtec PBO rigging

1. Fiber Rigging

PBO Biconic End Fittings

All Navtec biconic terminals have been designed and optimised to take advantage of the strength of the fiber cable that they are being applied to. For Aramid cables, we offer biconic terminals made from aluminum, stainless steel, or titanium to suit any application or budget. For our PBO cables, we offer our biconic terminals in titanium due to the unique requirements of the PBO fiber.

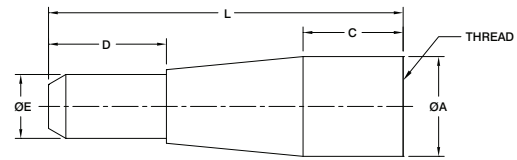
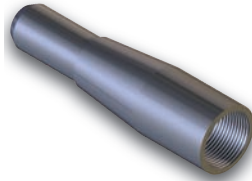
All Navtec fittings have been designed and applied to each Aramid or PBO cable size to provide adequate strength for any strength or stretch application. Our fittings use standard pin sizes and dimensions that make retrofit and new rig application easy. Alternatively, Navtec can supply any number of non-standard pin sizes or fitting dimensions to suit specific applications. The female thread in our biconic terminal offers one of the most versatile attachment available. Virtually any custom fitting design can be adapted to fit our terminals.

PBO Fiber Cable

SIZE	COVER DIAMETER		MINIMUM BREAKING STRENGTH		WEIGHT		STRETCH EQUIVALENT	
	mm	in	kg	lbs	kg/m	lb/ft	N-50 Rod	1x19 Wire
5.3T	8.0	0.315	5,300	11,700	0.050	0.034	-8	7mm, 9/32
8.7T	10.0	0.394	8,700	19,200	0.076	0.051	-12	8mm, 5/16
12.4T	11.8	0.465	12,400	27,300	0.112	0.075	-17	11mm, 7/16
16T	13.1	0.516	16,000	35,300	0.135	0.091	-22	12mm
21T	15.0	0.591	21,000	46,300	0.176	0.118	-30	14mm, 9/16
27T	16.8	0.661	27,000	59,500	0.224	0.151	-40	16mm, 5/8
35T	19.2	0.756	35,000	77,200	0.285	0.192	-48	19mm, 3/4
45T	22.0	0.866	45,000	99,200	0.376	0.253	-60	22mm, 7/8
57T	23.6	0.929	57,000	125,700	0.471	0.317	-76	22mm, 7/8
71T	26.2	1.031	71,000	156,600	0.577	0.388	-91	26mm, 1
88T	28.7	1.130	88,000	194,000	0.693	0.466	-115	28mm, 1-1/8
110T	31.8	1.252	110,000	242,600	0.852	0.573	-150	32mm, 1-1/4

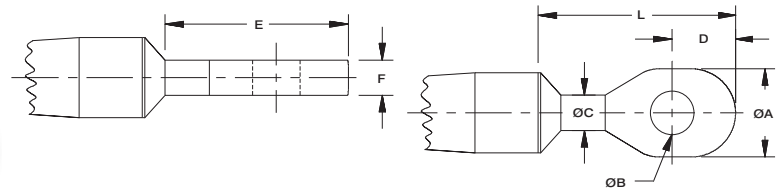
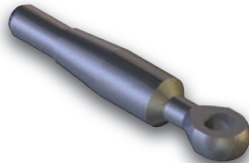


R576-06 PBO Titanium Socket



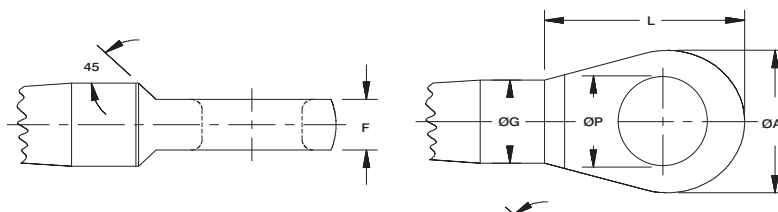
PART NUMBER	SIZE	ØA		THREAD	L		C		D		ØE		WEIGHT	
		in	mm		in	mm	in	mm	in	mm	in	mm	lbs	kg
R576-06-05T35	5.3T	0.886	22.50	M20 x 1.5	3.150	80.00	1.043	26.50	1.043	26.50	0.571	14.50	0.137	0.062
R576-06-08T75	8.7T	1.063	27.00	M22 x 1.5	3.803	96.60	1.161	29.50	1.142	29.00	0.646	16.40	0.225	0.102
R576-06-12T45	12.4T	1.150	29.20	M25 x 1.5	4.280	108.70	1.417	36.00	1.472	37.40	0.772	19.60	0.331	0.150
R576-06-16T05	16T	1.350	34.30	M30 x 2	5.000	127.00	1.378	35.00	1.701	43.20	0.874	22.20	0.505	0.229
R576-06-21T05	21T	1.610	40.90	M36 x 2	5.720	145.30	1.614	41.00	1.902	48.30	1.031	26.20	0.820	0.372
R576-06-27T05	27T	1.713	43.50	M36 x 2	5.984	152.00	1.516	38.50	1.181	30.00	1.047	26.60	1.319	0.598
R576-06-35T05	35T	1.850	47.00	M38 x 2	6.732	171.00	1.866	47.40	1.181	30.00	1.181	30.00	1.837	0.833
R576-06-45T05	45T	2.079	52.80	M42 x 2	8.268	210.00	2.362	60.00	1.772	45.00	1.181	30.00	2.050	0.930
R576-06-57T05	57T	2.362	60.00	M48 x 2	9.370	238.00	2.362	60.00	1.496	38.00	1.437	36.50	2.430	1.102

R576-07 Eye PBO



PART NUMBER	SIZE	ØA		THREAD	ØB (Hole)		ØC		D		E		F		L		WEIGHT	
		in	mm		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
R576-07-05T35	5.3T	0.878	22.30	M20 x 1.5	0.453	11.500	0.394	10.00	0.500	12.70	1.457	37.00	0.394	10.000	1.772	45.00	0.225	0.102
R576-07-08T75	8.7T	1.024	26.00	M22 x 1.5	0.571	14.500	0.531	13.50	0.571	14.50	1.614	41.00	0.531	13.500	1.969	50.00	0.322	0.146
R576-07-12T45	12.4T	1.220	31.00	M25 x 1.5	0.642	16.300	0.630	16.00	0.709	18.00	1.929	49.00	0.630	16.000	2.283	58.00	0.545	0.247
R576-07-16T05	16T	1.417	36.00	M30 x 2.00	0.760	19.300	0.709	18.00	0.787	20.00	2.126	54.00	0.709	18.000	2.638	67.00	0.867	0.393
R576-07-21T05	21T	1.610	40.90	M36 x 2.00	0.807	20.500	0.787	20.00	0.906	23.00	2.677	68.00	0.787	20.000	3.248	82.50	1.385	0.628
R576-07-27T05	27T	1.752	44.50	M38 x 2.00	0.886	22.500	0.866	22.00	1.004	25.50	2.953	75.00	0.866	22.000	3.543	90.00	2.156	0.978
R576-07-35T05	35T	1.929	49.00	M40 x 2.00	1.012	25.700	1.024	26.00	1.102	28.00	3.228	82.00	1.024	26.000	3.858	98.00	2.850	1.294

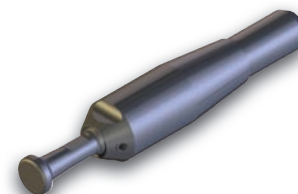
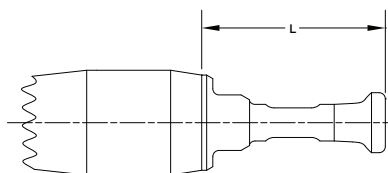
R576-20 Large Eye PBO



PART NUMBER	SIZE	ØA		THREAD	F		ØG		L		ØP		WEIGHT	
		in	mm		Metric	in	mm	in	mm	in	mm	in	mm	lbs
R576-20-05T35	5.3T	1.378	35.00	M20 x 150	0.374	9.50	0.878	22.30	1.693	43.00	0.939	23.00	0.273	0.124
R576-20-08T75	8.7T	1.654	42.00	M22 x 150	0.591	15.00	1.063	27.00	2.126	54.00	1.102	27.00	0.459	0.208
R576-20-12T45	12.4T	1.969	50.00	M25 x 150	0.669	17.00	1.142	29.00	2.520	64.00	1.306	32.00	0.701	0.318
R576-20-16T05	16T	2.126	54.00	M30 x 200	0.728	18.50	1.350	34.30	2.835	72.00	1.388	34.00	1.056	0.479
R576-20-21T05	21T	2.283	58.00	M36 x 200	0.787	20.00	1.606	40.80	3.110	79.00	1.469	36.00	1.625	0.737
R576-20-27T05	27T	2.480	63.00	M38 x 200	0.866	22.00	1.752	44.50	3.425	87.00	1.633	40.00	2.602	1.180
R576-20-35T05	35T	2.717	69.00	M40 x 200	0.984	25.00	1.929	49.00	3.780	96.00	1.772	45.00	3.352	1.520

R576-31 PBO MSB Stud

The MSB Stud is designed to fit the F235 Stemball parts in tip cups, tangs, and other terminations for rod.

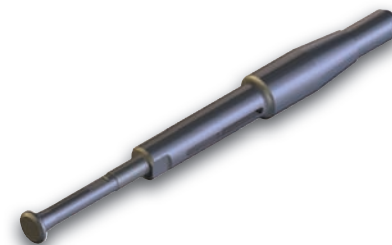
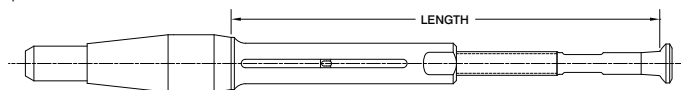


PART NUMBER	SIZE	F235 STUD EQUIVALENT	THREAD	L		WEIGHT	
				Metric	in	mm	lbs
R576-31-08T7-1214	8.7T	F235-012	M22 x 1.5	1.86	47.24	0.36	0.16
R576-31-12T4-1716	12.4T	F235-017	M25 x 1.5	2.03	51.56	0.53	0.24
R576-31-16T-2218	16T	F235-022	M30 x 2	2.23	56.64	0.79	0.36
R576-31-21T-3020	21T	F235-030	M36 x 2	2.54	64.52	1.12	0.51
R576-31-27T-4024	27T	F235-040	M36 x 2	2.92	74.17	1.45	0.66
R576-31-35T-4828	35T	F235-048	M38 x 2	3.10	78.74	1.91	0.87
R576-31-45T-6032	45T	F235-060	M42 x 2	3.53	89.66	2.74	1.24
R576-31-57T-7634	57T	F235-076L	M48 x 2	4.12	104.65	4.07	1.85

See R576-06 for PBO socket geometry. See F235 for micro stemball stud geometry.

R576-34 Tip Turnbuckle

The R576-34 Tip Turnbuckle uses standard ball head screws to fit tip cups, tangs, spreader bars, etc. where adjustment is preferred.



PART NUMBER	SIZE	THREAD SIZE	LENGTH OPEN		LENGTH CLOSED		WEIGHT	
			in	mm	in	mm	lb	kg
R576-34-08T714	8.7T	7/16-14	9.4	238.8	6.5	165.1	0.69	0.31
R576-34-12T416	12.4T	1/2-20	10.1	256.5	7.0	177.8	1.00	0.45
R576-34-16T018	16T	9/16-18	11.4	289.6	7.8	198.1	1.51	0.68
R576-34-21T020	21T	5/8-18	14.0	355.6	10.4	264.2	2.32	1.05
R576-34-27T024	27T	3/4-16	13.8	350.5	10.2	259.1	2.98	1.35
R576-34-35T028	35T	7/8-14	14.5	368.3	10.9	276.9	3.94	1.79
R576-34-45T032	45T	1-12	15.2	386.1	11.0	279.4	5.16	2.34
R576-34-57T036	57T	1 1/8-12	20.6	523.2	15.2	386.1	8.76	3.97

Aramid Biconic End Fittings



Aramid Fiber Cable

SIZE	COVER DIAMETER		MINIMUM BREAKING STRENGTH		WEIGHT		STRETCH EQUIVALENT	
	mm	in	kg	lbs	kg/m	lb/ft	N-50 Rod	1x19 Wire
3T	8.0	0.315	3,000	6,600	0.027	0.018	na	3/16
3.8T	8.5	0.335	3,800	8,400	0.055	0.037	-4	5mm
5T	10.0	0.394	5,000	11,000	0.075	0.050	-6	6mm
7T	12.0	0.472	7,000	15,400	0.107	0.072	-8	7mm, 9/32
9T	13.1	0.516	9,000	19,800	0.127	0.085	-10	8mm, 5/16
12T	15.0	0.591	12,000	26,500	0.166	0.112	-12	3/8
15T	16.8	0.661	15,000	33,100	0.209	0.140	-17	10mm
20T	19.1	0.752	20,000	44,100	0.271	0.182	-22	12mm
25T	22.0	0.866	25,000	55,100	0.359	0.241	-30	14mm, 9/16
31T	25.0	0.984	31,000	68,400	0.465	0.313	-40	16mm, 5/8
43T	28.7	1.130	43,000	94,800	0.611	0.411	-48	19mm, 3/4
54T	32.3	1.272	54,000	119,100	0.775	0.521	-60	22mm, 7/8
75T	39.9	1.571	75,000	165,400	1.183	0.795	-91	26mm, 1
90T	42.6	1.677	90,000	198,500	1.347	0.905	-115	28mm, 1-1/8
150T	56.6	2.228	150,000	330,800	2.310	1.553	-150	32mm, 1-1/4
300T	77.2	3.039	300,000	661,500	4.240	2.850	-320	-

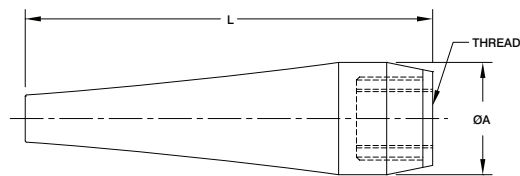


SW 100 RS – Blues image courtesy of Southern Wind

Aramid Sockets

R572-46 Aluminum Sockets

Made from high-strength aluminum except in the largest sizes. Includes the socket, cone, and 316 Stainless Steel reducer. Used with eyes, T's, swivel eyes, studs, forks, toggles, shroud terminals and lashing eyes to make a complete line of fitting for the soft Kevlar.



R572-46 Sockets Dimensions & Part Numbers (Aluminum)

PART NUMBER	SIZE	A		L		THREAD UNF	WEIGHT	
		in	mm	in	mm		lbs	kg
R572-46-03T-12	3/3.8T	0.938	23.81	3.465	88.01	3/8-24	0.149	0.068
R572-46-03T-16	3/3.8T	0.938	23.81	3.465	88.01	1/2-20	0.132	0.060
R572-46-03T-18	3/3.8T	0.938	23.81	3.465	88.01	9/16-18	0.121	0.055
R572-46-05T-16	5T	1.100	27.94	3.992	101.40	1/2-20	0.223	0.101
R572-46-05T-18	5T	1.100	27.94	3.992	101.40	9/16-18	0.211	0.096
R572-46-05T-20	5T	1.100	27.94	3.992	101.40	5/8-18	0.198	0.090
R572-46-07T-16	7T	1.300	33.02	4.730	120.14	1/2-20	0.398	0.180
R572-46-07T-18	7T	1.300	33.02	4.730	120.14	9/16-18	0.385	0.175
R572-46-07T-20	7T	1.300	33.02	4.730	120.14	5/8-18	0.371	0.168
R572-46-07T-24	7T	1.300	33.02	4.730	120.14	3/4-16	0.338	0.153
R572-46-09T-18	9T	1.438	36.51	5.213	132.41	9/16-18	0.521	0.236
R572-46-09T-20	9T	1.438	36.51	5.213	132.41	5/8-18	0.505	0.229
R572-46-09T-22	9T	1.438	36.51	5.213	132.41	11/16-16	0.486	0.220
R572-46-09T-24	9T	1.438	36.51	5.213	132.41	3/4-16	0.466	0.211
R572-46-09T-28	9T	1.438	36.51	5.213	132.41	7/8-14	0.421	0.191
R572-46-12T-24	12T	1.750	44.45	5.977	151.82	3/4-16	0.865	0.392
R572-46-12T-36	12T	1.750	44.45	5.977	151.82	1 1/8-12	0.708	0.321
R572-46-15T-24	15T	1.850	46.99	6.689	169.90	3/4-16	1.045	0.474
R572-46-15T-36	15T	1.850	46.99	6.689	169.90	1 1/8-12	0.868	0.394
R572-46-20T-26	20T	2.050	52.07	7.707	195.76	13/16-16	1.479	0.671
R572-46-20T-40	20T	2.050	52.07	7.707	195.76	1 1/4-12	1.187	0.538
R572-46-25T-44	25T	2.375	60.33	8.954	227.43	1 3/8-12	1.918	0.870
R572-46-31T-48	31T	2.625	66.68	10.012	254.30	1 1/2-12	2.670	1.211

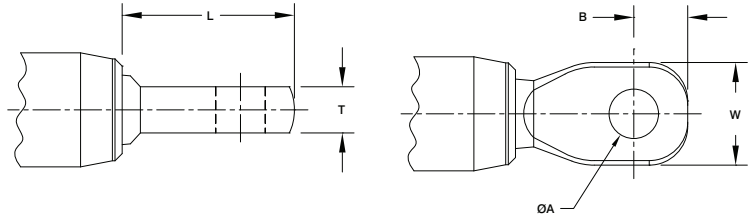
R572-66 Sockets Dimensions & Part Numbers (Stainless Steel)

R572-66-31T-48	31T	2.188	55.56	9.225	234.32	1 1/2-12	3.558	1.614
R572-66-43T-56	43T	2.563	65.09	10.624	269.85	1 3/4-7	5.469	2.480
R572-66-54T-72	54T	2.938	74.61	12.186	309.52	2 1/4-6	7.504	3.403
R572-66-79T-80	79T	3.438	87.31	14.807	376.10	2 1/2-6	14.025	6.361

1. Fiber Rigging

R572-47 Marine Eye Terminal

Offers the highest strength and lowest weight in terminal bodies and reducers. Low-weight, high-strength anodized aluminum bodies are used to mate with high modulus Aramid Fiber Cable. Titanium options are also available. End fittings are made from 316 stainless.



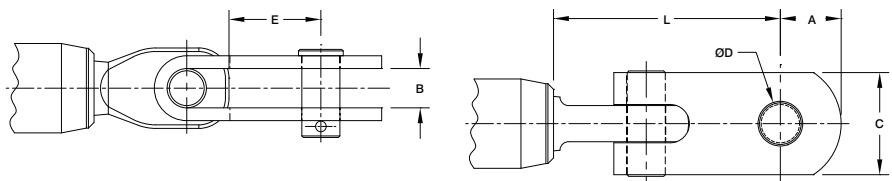
R572-47 Sockets Dimensions & Part Numbers (Aluminum)

PART NUMBER	SIZE	A (Pin)		T		W		L		B		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
R572-47-03T-12	3.0T	3/8	9.53	0.350	8.89	0.854	21.69	1.100	27.94	0.430	10.92	0.215	0.098
R572-47-03T-14	3.0T	7/16	11.11	0.375	9.53	0.965	24.51	1.400	35.56	0.488	12.40	0.246	0.112
R572-47-03T8-14	3.8T	7/16	11.11	0.375	9.53	0.965	24.51	1.400	35.56	0.488	12.40	0.246	0.112
R572-47-03T8-16	3.8T	1/2	12.70	0.370	9.40	1.045	26.54	1.460	37.08	0.590	14.99	0.258	0.117
R572-47-05T-16	5T	1/2	12.70	0.420	10.67	1.090	27.69	1.525	38.74	0.630	16.00	0.335	0.152
R572-47-07T-16	7T	1/2	12.70	0.490	12.45	1.090	27.69	1.550	39.37	0.590	14.99	0.508	0.230
R572-47-07T-20	7T	5/8	15.88	0.490	12.45	1.310	33.27	1.840	46.74	0.680	17.27	0.626	0.284
R572-47-09T-20	9T	5/8	15.88	0.520	13.21	1.340	34.04	2.100	53.34	0.720	18.29	0.803	0.364
R572-47-12T-24	12T	3/4	19.05	0.710	18.03	1.570	39.88	2.660	67.56	0.860	21.84	1.546	0.701
R572-47-15T-28	15T	7/8	22.23	0.710	18.03	1.870	47.50	2.860	72.64	0.990	25.15	1.869	0.848
R572-47-20T-28	20T	7/8	22.23	0.830	21.08	1.870	47.50	2.860	72.64	0.990	25.15	2.381	1.080
R572-47-25T-32	25T	1	25.40	0.940	23.88	2.130	54.10	2.950	74.93	1.080	27.43	3.455	1.567
R572-47-31T-36	31T	1 1/8	28.58	1.010	25.65	2.520	64.01	3.250	82.55	1.180	29.97	4.561	2.068

R572-67 Sockets Dimensions & Part Numbers (Stainless Steel)

R572-67-31T-36	31T	1 1/8	28.58	1.010	25.65	2.520	64.01	3.250	82.55	1.180	29.97	5.449	2.471
R572-67-43T-40	43T	1 1/4	31.75	1.130	28.70	2.700	68.58	3.660	92.96	1.490	37.85	8.629	3.913
R572-67-54T-44	54T	1 3/8	34.93	1.240	31.50	2.950	74.93	4.080	103.63	1.650	41.91	N/A	N/A

R572-48 Double Jaw Toggle



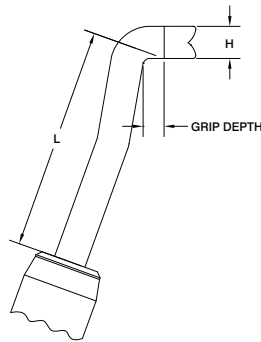
R572-48 Double Jaw Toggle Terminal Dimensions & Part Numbers (Aluminum)

PART NUMBER	SIZE	D		A		B		C		L		E		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
R572-48-03T-12	3.0T	3/8	9.53	0.625	15.88	0.385	9.78	1.00	25.40	2.30	58.42	1.200	30.48	0.397	0.180
R572-48-03T8-14	3.8T	7/16	11.11	0.637	16.18	0.447	11.35	1.00	25.40	2.59	65.84	1.190	30.23	0.521	0.236
R572-48-05T-16	5T	1/2	12.70	0.780	19.81	0.520	13.21	1.25	31.75	2.95	74.80	1.425	36.20	0.778	0.353
R572-48-07T-16	7T	1/2	12.70	0.780	19.81	0.520	13.21	1.25	31.75	3.01	76.45	1.460	37.08	0.951	0.431
R572-48-09T-20	9T	5/8	15.88	0.925	23.50	0.645	16.38	1.60	40.64	3.66	92.96	1.560	39.62	1.499	0.680
R572-48-12T-24	12T	3/4	19.05	1.190	30.23	0.770	19.56	2.00	50.80	4.43	112.52	1.770	44.96	2.932	1.330
R572-48-15T-28	15T	7/8	22.23	1.190	30.23	0.895	22.73	2.00	50.80	5.07	128.78	2.210	56.13	4.242	1.924
R572-48-20T-28	20T	7/8	22.23	1.190	30.23	0.895	22.73	2.00	50.80	5.07	128.78	2.210	56.13	4.754	2.156
R572-48-25T-32	25T	1	25.40	1.450	36.83	1.040	26.42	2.50	63.50	5.50	139.70	2.550	64.77	7.088	3.215
R572-48-31T-36	31T	1 1/8	28.58	1.450	36.83	1.165	29.59	2.50	63.50	6.07	154.18	2.820	71.63	8.77	3.977

R572-68 Sockets Dimensions & Part Numbers (Stainless Steel)

R572-68-31T-36	31T	1 1/8	28.58	1.450	36.83	1.165	29.59	2.50	63.50	6.07	154.18	2.820	71.63	9.658	4.380
R572-68-43T-40	43T	1 1/4	31.75	1.820	46.23	1.290	32.77	3.00	76.20	7.51	190.75	3.510	89.15	N/A	N/A

R572-49 T Terminal



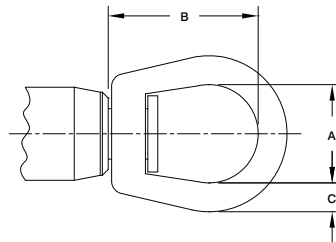
SIZE	PART NUMBER	H		HEAD WIDTH		T*		L**		WEIGHT		BACKING PLATE	RETAINING PLUG
		in	mm	in	mm	in	mm	in	mm	lbs	kg		
3T	R572-49-03T-01	0.44	11.1	0.79	20.0	0.16	4.06	3.8	97	0.31	0.14	N740-M05	N742-M05
3.8T	R572-49-03T8-01	0.56	14.3	1.10	28.0	0.17	4.39	4.0	102	0.56	0.26	N740-M07	N742-M07
5T	R572-49-05T-01	0.56	14.3	1.10	28.0	0.17	4.39	4.0	102	0.68	0.31	N740-M07	N742-M07
7T	R572-49-07T-01	0.70	17.8	1.26	32.0	0.22	5.59	5.0	128	1.19	0.54	N740-M10	N742-M10
9T	R572-49-09T-01	0.70	17.8	1.26	32.0	0.22	5.59	5.8	146	1.48	0.67	N740-M10	N742-M10
12T	R572-49-12T-01	0.70	17.8	1.26	32.0	0.45	11.43	5.7	145	1.86	0.85	N740-M10	N742-M10
15T	R572-49-15T-01	0.70	17.8	1.26	32.0	0.45	11.43	5.7	145	2.05	0.93	N740-M10	N742-M10

* T dimension above is for 15 degree shroud angle. Allowable mast thickness increases and decreases with shroud angle.

** Length measured from reducer to bearing surface.

Rod T-terminals are designed for shroud angles of 10 to 20 degrees. T-Terminals for use with thicker mast walls are available on a custom basis.

R572-50 Swivel Eye

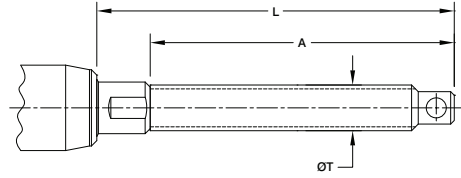


PART NUMBER	SIZE	A		B		C		WEIGHT	
		in	mm	in	mm	in	mm	lbs	kg
R572-50-03T-01	3.0T	1.000	25.40	1.510	38.35	0.280	7.11	0.33	0.151
R572-50-03T8-01	3.8T	1.185	30.10	1.750	44.45	0.360	9.14	0.44	0.200
R572-50-05T-01	5T	1.185	30.10	1.750	44.45	0.360	9.14	0.52	0.234
R572-50-07T-01	7T	0.995	25.27	1.825	46.36	0.385	9.78	0.82	0.370
R572-50-09T-01	9T	1.485	37.72	2.220	56.39	0.480	12.19	1.04	0.472
R572-50-12T-01	12T	1.910	48.51	2.790	70.87	0.615	15.62	1.95	0.886
R572-50-15T-01	15T	1.910	48.51	2.790	70.87	0.615	15.62	2.13	0.967
R572-50-20T-01	20T	2.530	64.26	3.725	94.62	0.850	21.59	3.697	1.677

1. Fiber Rigging

R572-51 Threaded Stud

Used with soft Kevlar cable. Made from high-strength aluminum except with 17-4 SS in the largest sizes. Includes the socket, cone and 316 Stainless Steel reducer with threaded studs.



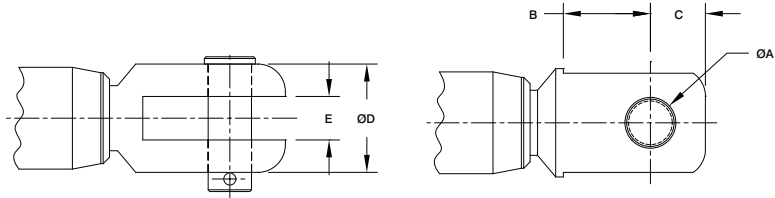
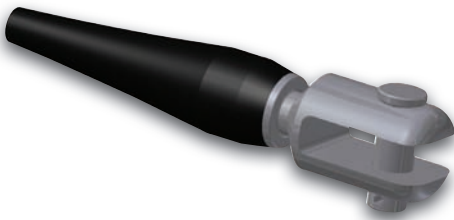
R572-51 Sockets Dimensions & Part Numbers (Aluminum)

PART NUMBER	SIZE	A		L		øT UNF	WEIGHT	
		in	mm	in	mm		lbs	kg
R572-51-03T-12	3T	2.560	65.02	3.160	80.26	3/8-24	0.239	0.108
R572-51-03T8-14	3.8T	2.950	74.93	3.530	89.66	7/16-20	0.273	0.124
R572-51-05T-16	5T	3.270	83.06	3.910	99.31	1/2-20	0.427	0.194
R572-51-07T-16	7T	3.270	83.06	4.020	102.11	1/2-20	0.623	0.283
R572-51-09T-20	9T	3.860	98.04	4.630	117.60	5/8-18	0.933	0.423
R572-51-12T-24	12T	4.530	115.06	5.330	135.38	3/4-16	1.609	0.730
R572-51-15T-28	15T	5.430	137.92	6.200	157.48	7/8-14	2.043	0.927
R572-51-20T-28	20T	5.430	137.92	6.250	158.75	7/8-14	2.592	1.176
R572-51-25T-32	25T	6.100	154.94	6.950	176.53	1-12	3.824	1.734
R572-51-31T-36	31T	7.090	180.09	8.090	205.49	1 1/8-12	5.100	2.313

R572-71 Sockets Dimensions & Part Numbers (Stainless Steel)

R572-71-31T-36	31T	7.090	180.09	8.090	205.49	1 1/8-12	5.988	2.716
R572-71-43T-40	43T	7.870	199.90	9.130	231.90	1 1/4-12	9.489	4.303

R572-52 Pin Fork



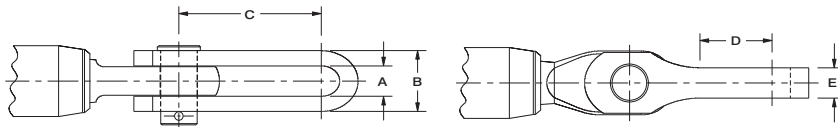
R572-52 Sockets Dimensions & Part Numbers (Aluminum)

PART NUMBER	SIZE	øA		B		C		øD		E		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
R572-51-03T-12	3T	2.560	65.02	3.160	80.26	3/8-24	0.239	0.108	22.23	0.374	9.50	0.301	0.137
R572-51-03T8-14	3.8T	2.950	74.93	3.530	89.66	7/16-20	0.273	0.124	28.70	0.437	11.10	0.435	0.197
R572-51-05T-16	5T	3.270	83.06	3.910	99.31	1/2-20	0.427	0.194	31.75	0.500	12.70	0.652	0.296
R572-51-07T-16	7T	3.270	83.06	4.020	102.11	1/2-20	0.623	0.283	31.75	0.500	12.70	0.805	0.365
R572-51-09T-20	9T	3.860	98.04	4.630	117.60	5/8-18	0.933	0.423	38.10	0.622	15.80	1.228	0.557
R572-51-12T-24	12T	4.530	115.06	5.330	135.38	3/4-16	1.609	0.730	47.75	0.748	19.00	2.272	1.030
R572-51-15T-28	15T	5.430	137.92	6.200	157.48	7/8-14	2.043	0.927	54.10	0.874	22.20	2.398	1.088
R572-51-20T-28	20T	5.430	137.92	6.250	158.75	7/8-14	2.592	1.176	54.10	0.874	22.20	3.513	1.593
R572-51-25T-32	25T	6.100	154.94	6.950	176.53	1-12	3.824	1.734	63.50	1.000	25.40	5.505	2.497
R572-51-31T-36	31T	7.090	180.09	8.090	205.49	1 1/8-12	5.100	2.313	69.85	1.120	28.45	7.550	3.424

R572-72 Sockets Dimensions & Part Numbers (Stainless Steel)

R572-71-31T-36	31T	7.090	180.09	8.090	205.49	1 1/8-12	5.988	2.716	69.85	1.120	28.45	8.438	3.827
R572-71-43T-40	43T	7.870	199.90	9.130	231.90	1 1/4-12	9.489	4.303	76.20	1.250	31.75	12.909	5.854

R572-53 Eye Jaw Toggle Terminal



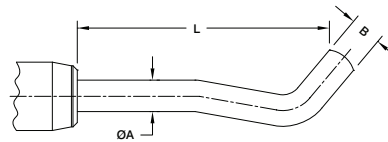
R572-53 Sockets Dimensions & Part Numbers (Aluminum)

PART NUMBER	SIZE	A		B		C		D		E		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
R572-53-03T-12	3.0T	0.390	9.91	0.766	19.46	1.800	45.72	0.810	20.57	0.365	9.27	0.379	0.172
R572-53-03T8-14	3.8T	0.450	11.43	0.825	20.96	2.000	50.80	0.910	23.11	0.427	10.85	0.463	0.210
R572-53-05T-16	5T	0.520	13.21	1.020	25.91	2.200	55.88	1.170	29.72	0.480	12.19	0.702	0.318
R572-53-07T-16	7T	0.520	13.21	1.020	25.91	2.200	55.88	1.170	29.72	0.480	12.19	0.875	0.397
R572-53-09T-20	9T	0.650	16.51	1.280	32.51	2.500	63.50	1.220	30.99	0.605	15.37	1.476	0.669
R572-53-12T-24	12T	0.770	19.56	1.530	38.86	2.900	73.66	1.470	37.34	0.730	18.54	2.677	1.214
R572-53-15T-28	15T	0.920	23.37	1.680	42.67	3.300	83.82	1.690	42.93	0.840	21.34	3.469	1.573
R572-53-20T-28	20T	0.920	23.37	1.680	42.67	3.300	83.82	1.690	42.93	0.840	21.34	3.981	1.805
R572-53-25T-32	25T	1.040	26.42	2.040	51.82	3.700	93.98	2.080	52.83	0.960	24.38	6.774	3.072
R572-53-31T-36	31T	1.130	28.70	2.130	54.10	4.100	104.14	2.270	57.66	1.090	27.69	8.278	3.754

R572-73 Sockets Dimensions & Part Numbers (Stainless Steel)

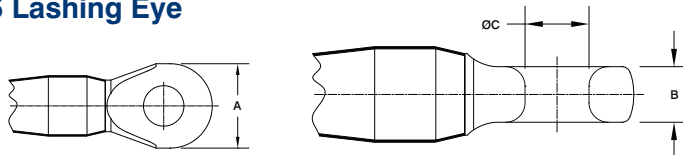
R572-73-31T-36	31T	1.130	28.70	2.130	54.10	4.100	104.14	2.270	57.66	1.090	27.69	9.166	4.157
R572-73-43T-40	43T	1.290	32.77	2.550	64.77	4.500	114.30	2.650	67.31	1.210	30.73	13.440	6.095

R572-54 Shroud Terminal



PART NUMBER	SIZE	oA		B		L		WEIGHT	
		in	mm	in	mm	in	mm	lbs	kg
R572-54-03T-01	3.0T	0.485	12.32	0.475	12.07	4.070	103.38	0.440	0.200
R572-54-03T8-01	3.8T	0.563	14.30	0.555	14.10	4.550	115.57	0.663	0.301
R572-54-05T-01	5T	0.563	14.30	0.555	14.10	4.550	115.57	0.723	0.328
R572-54-07T-01	7T	0.625	15.88	0.635	16.13	4.850	123.19	1.028	0.466
R572-54-09T-01	9T	0.700	17.78	0.700	17.78	6.000	152.40	1.447	0.656
R572-54-12T-01	12T	0.830	21.08	0.800	20.32	9.125	231.78	2.824	1.281
R572-54-15T-01	15T	0.830	21.08	0.800	20.32	9.125	231.78	3.004	1.362

R572-55 Lashing Eye



PART NUMBER	SIZE	A		B		oC		WEIGHT	
		in	mm	in	mm	in	mm	lbs	kg
R572-55-03T-01	3.0T	1.25	31.8	0.50	12.7	0.50	12.7	0.20	0.09
R572-55-03T8-01	3.8T	1.25	31.8	0.50	12.7	0.50	12.7	0.20	0.09
R572-55-05T-01	5T	1.50	38.1	0.58	14.8	0.63	15.9	0.34	0.15
R572-55-07T-01	7T	1.75	44.5	0.70	17.8	0.75	19.0	0.53	0.24
R572-55-09T-01	9T	2.00	50.8	0.85	21.6	0.88	22.2	0.72	0.33
R572-55-12T-01	12T	2.50	63.5	1.00	25.4	1.25	31.7	1.17	0.53
R572-55-15T-01	15T	2.75	69.9	1.10	27.9	1.38	34.9	1.54	0.70
R572-55-20T-01	20T	3.00	76.2	1.25	31.7	1.44	36.5	2.18	0.99
R572-55-25T-01	25T	3.00	76.2	1.30	33.0	1.50	38.1	5.51	2.50

1. Fiber Rigging

Anti-Torsion (AT) Cable

The increasing requirement of furling headsails on numerous projects has led to the development of Navtec's Anti-Torsion (AT) Aramid or PBO cable. This cable's unique internal construction makes it the best choice for permanently installed furling Headstays. Navtec has worked closely with furler suppliers to provide the most torsion-resistant cable assembly available today. Navtec terminations can be easily fitted directly to existing furling units. We have also worked to supply direct connections between the biconic socket and furler, resulting in the cleanest, lightest connection available. Navtec can custom design Anti-Torsion cable end fittings that are compatible with roller furlers from most manufacturers.

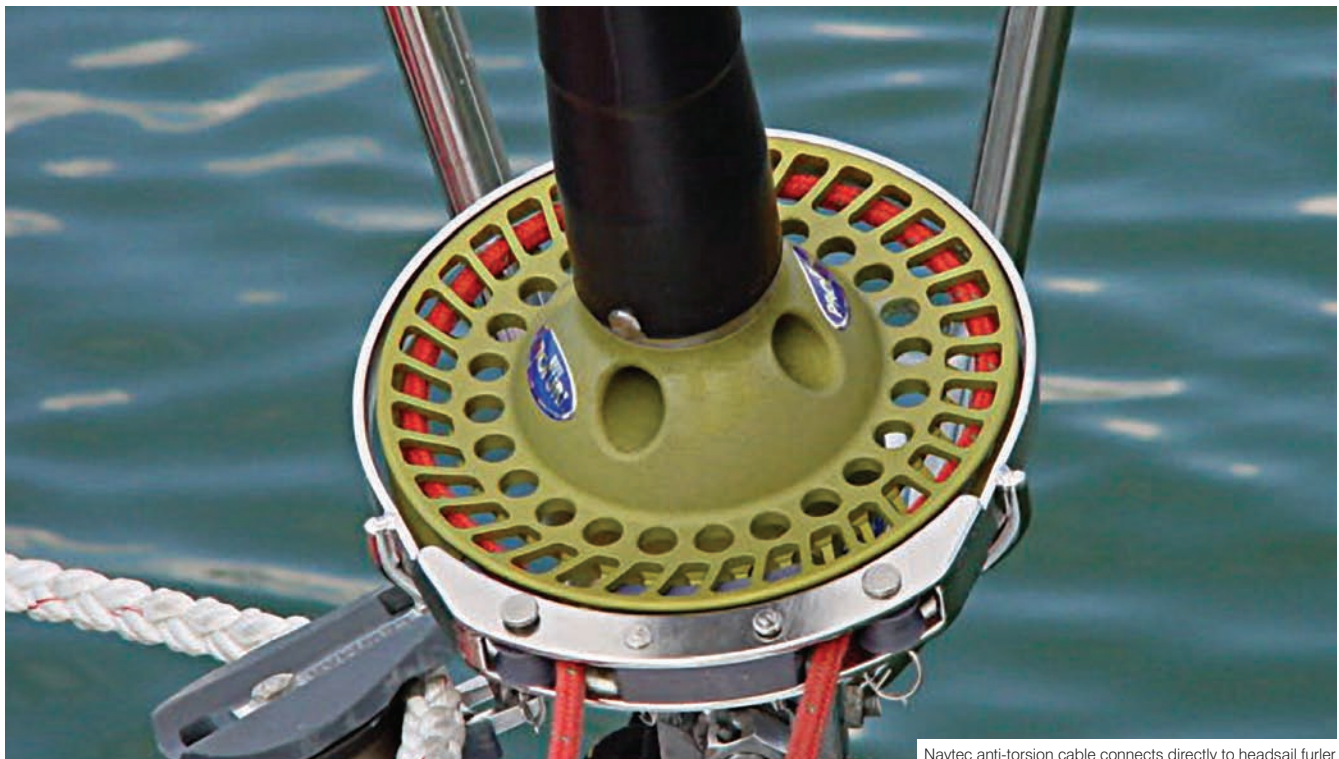
Anti-Torsion (AT) Aramid Fiber Cable

SIZE	MINIMUM BREAKING LOAD		COVER DIAMETER		WEIGHT		STRETCH EQUIVALENT	
	kg	lbs	mm	in	kg/m	lb/ft	N-50 Rod	1x19 Wire
14T	14000	30870	19.2	0.756	0.232	0.156	-17	10mm
19T	19000	41895	21.0	0.827	0.285	0.192	-22	12mm
24T	24000	52920	22.0	0.866	0.350	0.235	-30	14mm, 9/16
30T	30000	66150	25.0	0.984	0.460	0.309	-40	16mm, 5/8
40T	40000	88200	28.9	1.138	0.610	0.410	-48	19mm, 3/4
54T	54000	119070	33.8	1.331	0.080	0.054	-60	22mm, 7/8
73T	73000	160965	39.7	1.563	1.150	0.773	-91	26mm, 1
90T	90000	198450	43.5	1.713	1.480	0.995	-115	28mm, 1-1/8



Anti-Torsion (AT) PBO Fiber Cable

SIZE	MINIMUM BREAKING LOAD		COVER DIAMETER		WEIGHT		STRETCH EQUIVALENT	
	kg	lbs	mm	in	kg/m	lb/ft	N-50 Rod	1x19 Wire
17T	17000	37485	15.4	0.606	0.220	0.148	-22	12mm
22T	22000	48510	17.0	0.669	0.250	0.168	-30	14mm, 9/16
28T	28000	61740	19.5	0.768	0.310	0.208	-40	16mm, 5/8
36T	36000	79380	21.4	0.843	0.388	0.261	-48	19mm, 3/4
46T	46000	101430	22.7	0.894	0.460	0.309	-60	22mm, 7/8
54T	54000	119070	25	0.984	0.540	0.363	-76	22mm, 7/8
71T	71000	156555	28.6	1.126	0.700	0.470	-91	26mm, 1
88T	88000	194040	32.5	1.280	0.900	0.605	-115	28mm, 1-1/8
106T	106000	233730	34.6	1.362	1.000	0.672	-150	32mm, 1-1/4



Navtec anti-torsion cable connects directly to headsail furler

A high-angle, low-perspective shot of a sailboat's deck and sail. The sail is white with a grid of thin lines. The deck is made of polished wood with several dark, teardrop-shaped hatches. The boat is moving through blue water, creating a white wake. The sky is clear and blue.

2. Rod Rigging

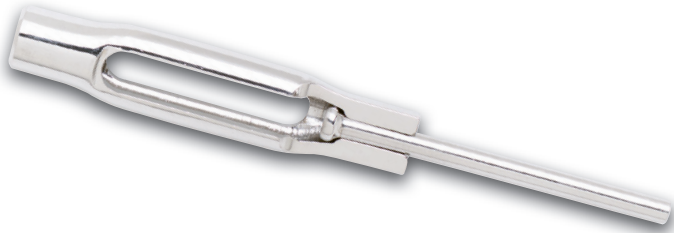
Superior performance, longevity, and brilliant aesthetics are the driving force of the original Navtec flagship rigging solution. Nitronic 50 rod rigging is the industry baseline for evolving rigging design.

2. Rod Rigging

Nitronic 50 Rod

Originally developed by Navtec using a cold-drawn process, the high-strength, low-stretch, corrosion-resistant Nitronic 50 rod is the industry standard. It is available in coil form in rod sizes up to -76 and in bar form for -76 and above. Navtec's Nitronic 50 rod can be found throughout the yachting industry, America's Cup racers, Super Yachts, bluewater cruisers, one-design racers, and production boats. Our highly-polished finish provides the final touch to our well-engineered rigging systems.

NAVTEC ROD IS SPECIFIED IN DASH SIZING, DENOTING THE BREAKING STRENGTH IN THOUSANDS OF POUNDS; I.E. -10 = 10,000 LB BREAKING STRENGTH.



ROD SIZE	PART NUMBER	DIAMETER			MINIMUM BREAKING STRENGTH		WEIGHT		STRETCH	
		NOMINAL		+/-						
		mm	in	in	kgs	lbs	kg/m	lb/ft	mm/mm/1000kg	in/in/1000lb
Nitronic 50 Coil (1)										
-4	R505-004	4.37	0.172	0.001	2,130	4,700	0.118	0.079	0.004	0.002
-6	R505-006	5.03	0.198	0.001	2,860	6,300	0.156	0.105	0.003	0.001
-8	R505-008	5.72	0.225	0.001	3,720	8,200	0.202	0.136	0.002	0.001
-10	R505-010	6.35	0.250	0.001	4,670	10,300	0.249	0.167	0.002	0.001
-12	R505-012	7.14	0.281	0.001	5,670	12,500	0.314	0.211	0.001	0.001
-15	R505-015	7.52	0.296	0.001	6,460	14,250	0.349	0.235	0.001	0.001
-17	R505-017	8.38	0.330	0.001	7,940	17,500	0.434	0.291	0.001	0.000
-22	R505-022	9.53	0.375	0.001	10,200	22,500	0.560	0.376	0.001	0.000
-30	R505-030	11.10	0.437	0.001	13,600	30,000	0.761	0.511	0.001	0.000
-40	R505-040	12.70	0.500	0.002	17,200	38,000	0.996	0.669	0.000	0.000
-48	R505-048	14.27	0.562	0.002	21,800	48,000	1.258	0.845	0.000	0.000
-60	R505-060	16.76	0.660	0.002	27,200	60,000	1.735	1.166	0.000	0.000
-76	R508-076	17.91	0.705	0.002	34,500	76,000	1.980	1.330	0.000	0.000

Nitronic 50 Bar (Gamma) (2)

-76	R508-P-076	17.91	0.705	0.002	34,500	76,000	1.980	1.330	0.000	0.000
-91	R508-P-091	19.51	0.768	0.002	40,800	90,000	2.349	1.579	0.000	0.000
-115	R508-P-115	22.23	0.875	0.002	52,200	115,000	3.049	2.049	0.000	0.000
-150	R508-P-150	25.40	1.000	0.002	68,000	150,000	3.983	2.677	0.000	0.000
-170	R508-P-170	27.08	1.066	0.002	77,100	170,000	4.526	3.042	0.000	0.000
-195	R508-P-195	28.58	1.125	0.002	86,200	190,000	5.041	3.388	0.000	0.000
-220	R508-P-220	30.25	1.191	0.002	98,400	217,000	5.650	3.797	0.000	0.000
-260	R508-P-260	33.35	1.313	0.002	118,000	260,000	6.866	4.614	0.000	0.000
-320	R508-P-320	38.10	1.500	0.002	145,000	320,000	8.961	6.022	0.000	0.000
-400	R508-P-400	44.45	1.750	0.002	181,000	400,000	12.197	8.197	0.000	0.000
-540	R508-P-540	50.80	2.000	0.002	245,000	540,000	15.933	10.707	0.000	0.000
-640	R508-P-640	57.15	2.250	0.002	291,000	640,000	20.254	13.598	0.000	0.000

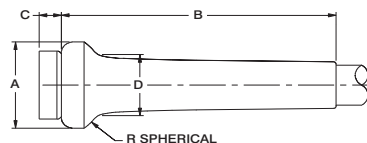
1. Rod sizes up through -76 are available in coil form or straightened in any length.
2. Gamma rod standard sizes available up to 40ft. For longer lengths, please contact Navtec.
3. Large sizes, especially -115 and above may be in stock in higher strengths than listed. Contact Navtec for details.

Stemballs

Stemballs were developed by Navtec with the simple aim of increasing the useful life of rod rigging. The stemball builds on the weight-saving approach of a ball terminal for rod, also originally developed by Navtec. Stemball rigging systems provide significant fatigue life with minimal weight and size increase.

F235 Micro Stemball

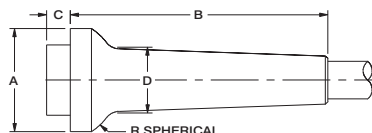
Micro Stemballs are Navtec's most advanced stemball. Through the use of high-strength material, and sophisticated computer stress analysis programs developed by Navtec's fatigue testing, Navtec has developed a smaller, lighter stemball. Commonly used in the L500- Tip cups, K150 & K550 Tangs.



ROD SIZE	PART NUMBER	A		B		C		D		R		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	grams
-4	F235-004	0.372	9.45	1.04	26.4	0.090	2.29	0.264	6.71	0.250	6.35	0.010	5
-6	F235-006	0.428	10.87	1.20	30.4	0.107	2.72	0.302	7.67	0.280	7.11	0.010	5
-8	F235-008	0.487	12.37	1.36	34.6	0.133	3.38	0.344	8.74	0.313	7.95	0.012	5
-10	F235-010	0.541	13.74	1.51	38.4	0.124	3.15	0.381	9.68	0.344	8.74	0.017	8
-12	F235-012	0.608	15.44	1.70	43.2	0.146	3.71	0.430	10.92	0.394	10.01	0.026	12
-15	F235-015	0.640	16.26	1.79	45.5	0.159	4.04	0.451	11.46	0.406	10.31	0.029	13
-17	F235-017	0.714	18.14	2.00	50.7	0.128	3.25	0.505	12.83	0.469	11.91	0.040	18
-22	F235-022	0.811	20.60	2.27	57.6	0.150	3.81	0.573	14.55	0.531	13.49	0.056	25
-30	F235-030	0.946	24.03	2.64	67.2	0.170	4.32	0.669	16.99	0.625	15.88	0.090	41
-40	F235-040	1.082	27.48	3.02	76.7	0.200	5.08	0.763	19.38	0.687	17.45	0.140	64
-48	F235-048	1.216	30.89	3.40	86.4	0.215	5.46	0.858	21.79	0.781	19.84	0.192	87
-60	F235-060	1.428	36.27	3.99	101.3	0.181	4.60	1.008	25.60	0.925	23.50	0.300	136
-76	F235-076L	1.525	38.74	4.27	108.5	0.304	7.72	1.078	27.38	1.000	25.40	0.375	170
-91	F235-091L	1.662	42.21	4.65	118.1	0.320	8.13	1.173	29.79	1.063	27.00	0.468	212
-115	F235-115L	1.893	48.08	5.29	134.4	0.273	6.93	1.339	34.01	1.250	31.75	0.664	301
-150	F235-150L	2.164	54.97	6.05	153.7	0.410	10.41	1.532	38.91	1.438	36.53	1.06	481
-170	F235-170L	2.307	58.60	6.45	163.8	0.452	11.48	1.631	41.43	1.500	38.10	1.29	585
-195	F235-195L	2.434	61.82	6.81	173.0	0.393	9.98	1.718	43.64	1.563	39.70	1.49	676
-220	F235-220L	2.577	65.46	7.21	183.1	0.297	7.54	1.822	46.28	1.688	42.88	1.68	760
-260	F235-260L	2.845	72.26	7.96	202.2	0.538	13.67	2.007	50.98	1.813	46.05	2.45	1110
-320	F235-320L	3.246	82.45	9.07	230.4	0.610	15.49	2.285	58.04	2.000	50.80	3.47	1570
-400	F235-400L	3.786	96.16	10.59	269.0	0.727	18.47	2.674	67.92	2.450	62.23	5.75	2610

F220 Tapered Stemball

The larger-head geometry of the F220 makes it suitable for use in spreader root tangs to help distribute load. Also used in the K200 tangs.

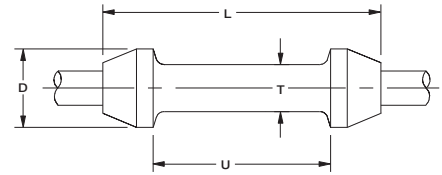


ROD SIZE	PART NUMBER	A		B		C		D		R		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	grams
-4	F220-004	0.476	12.09	1.04	26.5	0.092	2.34	0.304	7.72	0.312	7.92	0.012	5
-6	F220-006	0.550	13.97	1.19	30.2	0.116	2.95	0.338	8.59	0.344	8.74	0.020	9
-8	F220-008	0.683	17.35	1.35	34.3	0.127	3.23	0.430	10.92	0.438	11.13	0.034	15
-10	F220-010	0.683	17.35	1.50	38.1	0.100	2.54	0.434	11.02	0.438	11.13	0.035	16
-12	F220-012	0.772	19.61	1.69	42.8	0.146	3.71	0.496	12.60	0.500	12.70	0.055	25
-15	F220-015	0.911	23.14	1.78	45.1	0.159	4.04	0.600	15.24	0.594	15.09	0.088	40
-17	F220-017	0.911	23.14	1.98	50.3	0.183	4.65	0.600	15.24	0.594	15.09	0.088	40
-22	F220-022	1.030	26.16	2.25	57.2	0.151	3.84	0.672	17.07	0.656	16.66	0.125	57
-30	F220-030	1.188	30.18	2.62	66.6	0.206	5.23	0.760	19.30	0.750	19.05	0.195	88
-40	F220-040	1.375	34.93	3.03	77.0	0.200	5.08	0.878	22.30	0.875	22.23	0.303	137
-48	F220-048	1.530	38.86	3.41	86.7	0.215	5.46	1.010	25.65	1.000	25.40	0.440	200
-60	F220-060	1.659	42.14	4.00	101.6	0.181	4.60	1.031	26.19	1.060	26.92	0.520	236
-76	F220-076L	1.926	48.92	4.23	107.4	0.304	7.72	1.122	28.50	1.190	30.23	0.744	337
-91	F220-091L	2.100	53.34	4.61	117.0	0.320	8.13	1.311	33.30	1.344	34.14	1.061	481
-115	F220-115L	2.198	55.83	5.25	133.4	0.273	6.93	1.357	34.47	1.400	35.56	1.262	572
-150	F220-150L	2.500	63.50	6.00	152.4	0.410	10.41	1.550	39.37	1.600	40.64	1.852	840
-170	F220-170L	2.750	69.85	6.40	162.5	0.445	11.30	1.686	42.82	1.750	44.45	2.435	1100
-195	F220-195L	2.826	71.78	6.75	171.5	0.384	9.75	1.743	44.27	1.800	45.72	2.683	1220
-220	F220-220L	3.130	79.50	7.15	181.6	0.297	7.54	1.858	47.19	2.000	50.80	3.174	1440
-260	F220-260L	3.312	84.12	7.95	202.0	0.538	13.67	2.045	51.94	2.100	53.34	4.190	1900
-320	F220-320L	3.950	100.33	9.07	230.4	0.443	11.25	2.342	59.49	2.500	63.50	6.463	2930
-400	F220-400L	4.500	114.30	10.50	266.7	0.552	14.02	2.625	66.68	2.875	73.03	9.576	4340

Spreader Bends

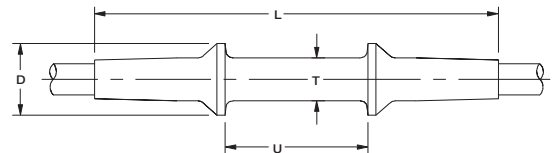
Navtec Spreader Bends cover and protect the rod rigging that passes over the spreader tip. They are ideally suited to masts where shroud-spreader angle change is between 1 and 15 degrees. Spreader bends available in both alloy and stainless steel.

L200 Aluminum Spreader Bend



ROD SIZE	PART NUMBER	L		U		D		T	
		in	mm	in	mm	in	mm	in	mm
-4	L200-004-24	1.30	33.0	0.75	19.1	0.500	12.7	0.300	7.62
-4	L200-004-32	1.55	39.4	1.00	25.4	0.500	12.7	0.300	7.62
-6	L200-006-28	1.41	35.8	0.88	22.4	0.625	15.9	0.365	9.27
-6	L200-006-32	1.53	38.9	1.00	25.4	0.625	15.9	0.365	9.27
-6	L200-006-48	2.03	51.6	1.50	38.1	0.625	15.9	0.365	9.27
-8	L200-008-32	1.98	50.3	1.00	25.4	0.688	17.5	0.425	10.8
-8	L200-008-40	2.23	56.6	1.25	31.8	0.688	17.5	0.425	10.8
-8	L200-008-64	2.98	75.7	2.00	50.8	0.688	17.5	0.425	10.8
-10	L200-010-32	1.98	50.3	1.00	25.4	0.688	17.5	0.425	10.8
-10	L200-010-40	2.23	56.6	1.25	31.8	0.688	17.5	0.425	10.8
-10	L200-010-64	2.98	75.7	2.00	50.8	0.688	17.5	0.425	10.8
-12	L200-012-40	2.15	54.6	1.25	31.8	0.750	19.1	0.485	12.3
-12	L200-012-48	2.40	61.0	1.50	38.1	0.750	19.1	0.485	12.3
-12	L200-012-64	2.90	73.7	2.00	50.8	0.750	19.1	0.485	12.3
-15	L200-015-48	2.46	62.5	1.50	38.1	0.750	19.1	0.505	12.8
-15	L200-015-64	2.96	75.2	2.00	50.8	0.750	19.1	0.505	12.8
-17	L200-017-48	2.50	63.5	1.50	38.1	0.750	19.1	0.550	14.0
-17	L200-017-56	2.75	69.9	1.75	44.5	0.750	19.1	0.550	14.0
-17	L200-017-64	3.00	76.2	2.00	50.8	0.750	19.1	0.550	14.0
-22	L200-022-56	3.10	78.7	1.75	44.5	1.000	25.4	0.600	15.2
-22	L200-022-64	3.35	85.1	2.00	50.8	1.000	25.4	0.600	15.2
-30	L200-030-64	3.15	80.0	2.00	50.8	1.000	25.4	0.600	15.2

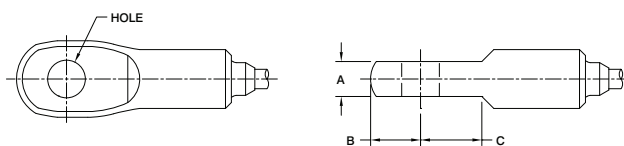
L250 Stainless Steel Spreader Bend



ROD SIZE	PART NUMBER	L		U		D		T		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	lbs	grams
-4	L250-004	2.68	68.1	0.75	19.1	0.500	12.70	0.300	7.62	0.040	18
-6	L250-006	3.22	81.8	0.88	22.4	0.625	15.88	0.365	9.27	0.070	32
-8	L250-008	3.60	91.4	1.00	25.4	0.688	17.48	0.425	10.80	0.109	49
-10	L250-010	3.60	91.4	1.00	25.4	0.688	17.48	0.425	10.80	0.160	73
-12	L250-012	4.20	106.7	1.25	31.8	0.750	19.05	0.485	12.32	0.139	63
-15	L250-015	4.20	106.7	1.25	31.8	0.750	19.05	0.485	12.32	0.144	65
-17	L250-017	4.90	124.5	1.50	38.1	0.750	19.05	0.550	13.97	0.187	85
-22	L250-022	4.85	123.2	1.75	44.5	1.000	25.40	0.600	15.24	0.270	122
-30	L250-030	5.23	132.8	2.00	50.8	1.000	25.40	0.600	15.24	0.238	108
-40	L250-040	5.52	140.2	2.25	57.2	1.188	30.18	0.660	16.76	0.319	145
-48	L250-048	5.93	150.6	2.50	63.5	1.188	30.18	0.720	18.29	0.339	154
-60	L250-060	6.87	174.5	2.50	63.5	1.375	34.93	0.845	21.46	0.520	236
-76	L250-076	7.18	182.4	2.50	63.5	1.470	37.34	0.903	22.94	0.620	281

G100 Marine Eyes

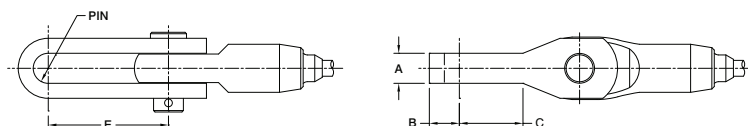
Navtec Marine Eyes have long been the industry standard and are used as upper and lower rod backstay terminals.



ROD SIZE	PART NUMBER	HOLE		A		B		C		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	lbs	kg
-4	G100-004	0.390	9.91	0.35	8.9	0.47	11.8	0.65	16.4	0.11	0.05
-6	G100-006	0.453	11.51	0.41	10.4	0.59	14.9	0.69	17.5	0.21	0.10
-8	G100-008	0.515	13.08	0.47	11.9	0.66	16.7	0.92	23.5	0.32	0.15
-10	G100-010	0.515	13.08	0.47	11.9	0.66	16.7	0.92	23.5	0.66	0.30
-12	G100-012	0.640	16.26	0.60	15.2	0.85	21.6	1.04	26.4	0.67	0.30
-15	G100-015	0.640	16.26	0.60	15.2	0.85	21.6	1.04	26.4	0.68	0.31
-17	G100-017	0.640	16.26	0.60	15.2	0.85	21.6	1.04	26.4	0.68	0.31
-22	G100-022	0.765	19.43	0.72	18.3	0.89	22.5	1.24	31.5	1.10	0.50
-30	G100-030	0.890	22.61	0.82	20.8	1.04	26.4	1.29	32.8	1.40	0.63
-40	G100-040	1.015	25.78	0.90	22.9	1.10	27.9	1.31	33.3	1.74	0.79
-48	G100-048	1.140	28.96	0.99	25.1	1.18	30.0	1.42	36.1	2.03	0.92
-60	G100-060	1.265	32.13	1.11	28.2	1.40	35.6	1.75	44.5	3.72	1.69
-76	G100-076L	1.265	32.13	1.23	31.2	1.59	40.4	2.00	50.8	6.04	2.74
-91	G100-091L	1.390	35.31	1.35	34.3	1.69	42.9	2.21	56.1	6.85	3.11
-115	G100-115L	1.580	40.13	1.50	38.1	1.95	49.5	2.42	61.5	10.9	4.96
-150	G100-150L	1.765	44.83	1.76	44.7	2.34	59.4	2.78	70.6	17.0	7.71
-170	G100-170L	1.890	48.01	1.88	47.8	2.37	60.2	3.00	76.2	20.8	9.44
-195	G100-195L	2.140	54.36	2.14	54.4	2.67	67.8	3.10	78.7	23.0	10.4
-220	G100-220L	2.265	57.53	2.26	57.4	2.80	71.1	3.25	82.6	27.0	12.2
-260	G100-260L	2.453	62.31	2.45	62.2	3.04	77.2	3.56	90.4	32.0	14.5
-320	G100-320L	2.625	66.68	2.62	66.5	3.02	76.7	3.94	100.1	55.0	24.9
-400	G100-400L	2.750	69.85	2.75	69.9	3.95	100.3	4.45	113.0	72.0	32.7

G200 High Fatigue Marine Eyes

Forestays require fittings that can toggle under high load and shifting lead angles. Navtec High Fatigue Eyes minimize bending stresses in the rod and are ideal for this application.



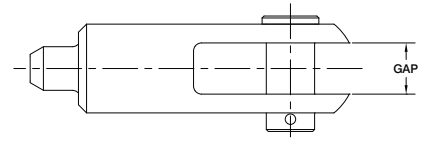
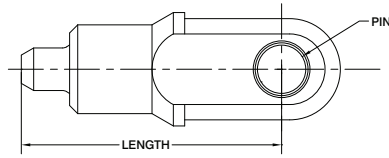
ROD SIZE	PART NUMBER	PIN		A		B		C		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	lbs	kg
-4	G200-004	0.375	9.53	0.37	9.3	0.38	9.5	0.83	21.1	0.23	0.10
-6	G200-006	0.437	11.10	0.43	10.8	0.41	10.3	0.90	22.9	0.42	0.19
-8	G200-008	0.500	12.70	0.48	12.2	0.50	12.7	1.17	29.7	0.68	0.31
-10	G200-010	0.500	12.70	0.48	12.2	0.50	12.7	1.17	29.7	0.67	0.30
-12	G200-012	0.625	15.88	0.61	15.4	0.63	15.9	1.21	30.7	1.39	0.63
-15	G200-015	0.625	15.88	0.61	15.4	0.63	15.9	1.21	30.7	1.36	0.62
-17	G200-017	0.625	15.88	0.61	15.5	0.63	15.9	1.21	30.7	1.36	0.62
-22	G200-022	0.750	19.05	0.73	18.5	0.75	19.1	1.47	37.3	2.20	1.00
-30	G200-030	0.875	22.23	0.84	21.3	0.81	20.6	1.68	42.7	3.00	1.36
-40	G200-040	1.000	25.40	0.96	24.4	1.00	25.4	2.08	52.8	4.42	2.00
-48	G200-048	1.125	28.58	1.09	27.7	1.06	26.9	2.26	57.4	5.64	2.56
-60	G200-060	1.250	31.75	1.21	30.7	1.25	31.8	2.65	67.3	8.32	3.77
-76	G200-076L	1.250	31.75	1.25	31.8	1.38	34.9	2.50	63.5	11.7	5.31
-91	G200-091L	1.375	34.93	1.34	34.0	1.44	36.5	3.40	86.4	14.8	6.69
-115	G200-115L	1.562	39.67	1.52	38.7	1.78	45.2	3.12	79.2	18.1	8.19
-150	G200-150L	1.750	44.45	1.71	43.4	1.88	47.8	4.87	123.7	32.5	14.7
-170	G200-170L	1.875	47.63	2.13	54.1	1.95	49.5	4.16	105.7	40.6	18.4
-195	G200-195L	2.125	53.98	2.25	57.2	2.19	55.6	4.50	114.3	52.3	23.7
-220	G200-220L	2.250	57.15	2.50	63.5	2.44	62.0	4.46	113.3	59.6	27.0
-260	G200-260L	2.500	63.50	2.90	73.7	2.50	63.5	5.50	139.7	70.3	31.9
-320	G200-320L	2.750	69.85	3.40	86.4	2.63	66.8	6.00	152.4	100	45.4
-400	G200-400L	2.875	73.03	4.00	101.6	2.70	68.6	6.44	163.6	129	58.4

Nutted pins standard -60 and above, nutted pins available on smaller sizes.
For E length see J100 chart on page 29.

2. Rod Rigging

H120/E200 Rod Jaws

Commonly used as upper and lower terminals on rod backstays, H120/E200 Rod Jaws are also used on low-fatigue assemblies like bobstays.

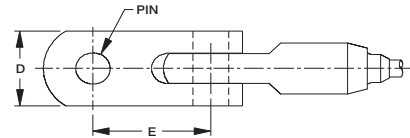
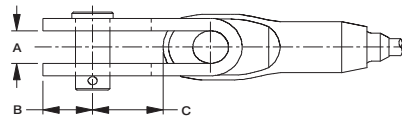


ROD SIZE	PART NUMBER	E200 NOSE	GAP		PIN		LENGTH	
			in	mm	in	mm	in	mm
-6	H120-141414	E200-006-14	0.44	11.2	0.433	11.0	2.41	61
-8	H120-161616	E200-008-16	0.52	13.2	0.495	12.6	2.88	73
-10	H120-161616	E200-010-16	0.52	13.2	0.495	12.6	2.88	73
-12	H120-202020	E200-012-20	0.64	16.1	0.620	15.7	3.42	87
-15	H120-202020	E200-015-20	0.64	16.3	0.620	15.7	3.42	87
-17	H120-202020	E200-017-20	0.64	16.3	0.620	15.7	3.42	87
-22	H120-242424	E200-022-24	0.77	19.6	0.745	18.9	4.02	102
-30	H120-282828	E200-030-28	0.89	22.6	0.870	22.1	4.45	113
-40	H120-323232	E200-040-32	1.01	25.7	0.995	25.3	4.80	122
-48	H120-323636	E200-048-32	1.14	29.0	1.120	28.4	5.18	132
-60	H120-404040	E200-060-40	1.26	32.0	1.245	31.6	6.06	154

H120 and E200 are both needed to make a rod jaw. Parts ordered separately.

H200 High Fatigue Jaws

Forestays require fittings that can toggle under high load and shifting lead angles. Navtec High Fatigue Jaws minimize bending stresses in the rod and are ideal for this application.



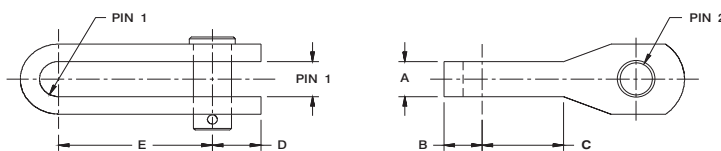
ROD SIZE	PART NUMBER	PIN		A		B		C		D		WEIGHT	
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
-4	H200-004	0.373	9.47	0.39	9.8	0.63	15.9	1.16	29.5	1.00	25.4	0.25	0.11
-6	H200-006	0.433	11.00	0.45	11.4	0.64	16.2	1.09	27.7	1.00	25.4	0.49	0.22
-8	H200-008	0.495	12.57	0.52	13.2	0.78	19.8	1.39	35.4	1.25	31.8	0.75	0.34
-10	H200-010	0.495	12.57	0.52	13.2	0.78	19.8	1.39	35.3	1.25	31.8	0.77	0.35
-12	H200-012	0.620	15.75	0.65	16.4	0.93	23.5	1.43	36.3	1.60	40.6	1.41	0.64
-15	H200-015	0.620	15.75	0.65	16.4	0.93	23.5	1.43	36.3	1.60	40.6	1.41	0.64
-17	H200-017	0.620	15.75	0.65	16.5	0.93	23.5	1.43	36.3	1.60	40.6	1.53	0.69
-22	H200-022	0.745	18.92	0.77	19.6	1.19	30.2	1.74	44.2	2.00	50.8	2.62	1.19
-30	H200-030	0.870	22.10	0.90	22.7	1.19	30.2	2.16	54.9	2.00	50.8	3.76	1.71
-40	H200-040	0.995	25.27	1.04	26.4	1.45	36.8	2.53	64.3	2.50	63.5	5.51	2.50
-48	H200-048	1.120	28.45	1.17	29.6	1.45	36.8	2.82	71.6	2.50	63.5	7.44	3.37
-60	H200-060	1.245	31.62	1.29	32.8	1.82	46.2	3.60	91.4	3.00	76.2	11.7	5.32
-76	H200-076L	1.245	31.62	1.29	32.8	1.82	46.2	3.41	86.6	3.00	76.2	13.6	6.15
-91	H200-091L	1.370	34.80	1.42	36.1	1.82	46.2	3.90	99.1	3.00	76.2	17.4	7.90
-115	H200-115L	1.558	39.57	1.63	41.4	2.25	57.2	4.23	107.4	3.75	95.3	26.5	12.0
-150	H200-150L	1.745	44.32	1.81	46.1	2.43	61.7	4.75	120.7	4.00	101.6	37.8	17.1
-170	H200-170L	1.870	47.50	1.93	49.0	3.13	79.5	4.83	122.7	5.00	127.0	38.1	17.3
-195	H200-195L	2.120	53.85	2.19	55.6	3.35	85.1	4.75	120.7	5.50	139.7	55.0	24.9
-220	H200-220L	2.245	57.02	2.38	60.5	3.70	94.0	5.00	127.0	6.00	152.4	64.2	29.1
-260	H200-260L	2.433	61.80	2.50	63.5	3.50	88.9	4.48	113.8	6.00	152.4	94.0	42.6
-320	H200-320L	2.495	63.37	2.56	65.0	4.00	101.6	6.17	156.7	6.60	167.6	101	46.0
-400	H200-400L	2.745	69.72	2.81	71.4	4.25	108.0	6.25	158.8	7.50	190.5	127	57.4

Nutted pins standard -60 and above, nutted pins available on smaller sizes.
For E length see J200 chart on page 29.

Toggles

Navtec toggles release fatigue stress and assist in allowing the load forces to align with the shroud angle.

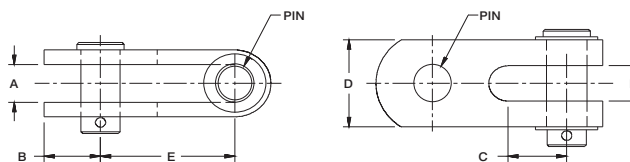
J100 Toggles



ROD SIZE	PART NUMBER	PIN1		PIN2		A		B		C		D		E	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
-4	J100-1210	0.375	9.53	0.311	7.90	0.37	9.3	0.38	9.5	0.83	21.1	0.45	11.4	1.80	45.7
-4	J100-1212	0.375	9.53	0.373	9.47	0.37	9.3	0.38	9.5	0.83	21.1	0.45	11.4	1.80	45.7
-6	J100-1412	0.437	11.10	0.373	9.47	0.43	10.8	0.41	10.3	0.90	22.9	0.63	16.0	2.00	50.8
-6	J100-1414	0.437	11.10	0.433	11.00	0.43	10.8	0.41	10.3	0.90	22.9	0.63	16.0	2.00	50.8
-8/-10	J100-1614	0.500	12.70	0.433	11.00	0.48	12.2	0.50	12.7	1.17	29.7	0.63	16.0	2.20	55.9
-8/-10	J100-1616	0.500	12.70	0.495	12.57	0.48	12.2	0.50	12.7	1.17	29.7	0.63	16.0	2.20	55.9
-12/-15/-17	J100-2018	0.625	15.88	0.561	14.25	0.61	15.4	0.63	15.9	1.21	30.7	0.79	20.1	2.50	63.5
-12/-15/-17	J100-2020	0.625	15.88	0.620	15.75	0.61	15.4	0.63	15.9	1.21	30.7	0.79	20.1	2.50	63.5
-22	J100-2420	0.750	19.05	0.620	15.75	0.73	18.5	0.75	19.1	1.47	37.3	0.92	23.4	2.90	73.7
-22	J100-2424	0.750	19.05	0.745	18.92	0.73	18.5	0.75	19.1	1.47	37.3	0.92	23.4	2.90	73.7
-30	J100-2824	0.875	22.23	0.745	18.92	0.84	21.3	0.81	20.6	1.68	42.7	1.18	30.0	3.30	83.8
-30	J100-2828	0.875	22.23	0.870	22.10	0.84	21.3	0.81	20.6	1.68	42.7	1.18	30.0	3.30	83.8
-40	J100-3228	1.000	25.40	0.870	22.10	0.96	24.4	1.00	25.4	2.08	52.8	1.18	30.0	3.70	94.0
-40	J100-3232	1.000	25.40	0.995	25.27	0.96	24.4	1.00	25.4	2.08	52.8	1.18	30.0	3.70	94.0
-48	J100-3632	1.125	28.58	0.995	25.27	1.09	27.7	1.06	26.9	2.26	57.4	1.45	36.8	4.10	104
-48	J100-3636	1.125	28.58	1.120	28.45	1.09	27.7	1.06	26.9	2.26	57.4	1.45	36.8	4.10	104
-60	J100-4036	1.250	31.75	1.120	28.45	1.21	30.7	1.25	31.8	2.65	67.3	1.45	36.8	4.50	114
-60	J100-4040	1.250	31.75	1.245	31.62	1.21	30.7	1.25	31.8	2.65	67.3	1.45	36.8	4.50	114
-76	J100-3840	1.250	31.75	1.183	30.05	1.25	31.8	1.38	34.9	2.50	63.5	1.50	38.1	4.56	116
-91	J100-4444	1.375	34.93	1.370	34.80	1.34	34.0	1.44	36.5	3.40	86.4	1.62	41.1	5.60	142
-115	J100-5050	1.562	39.67	1.557	39.55	1.52	38.7	1.78	45.2	3.12	79.2	1.88	47.6	5.69	145
-150	J100-5656	1.750	44.45	1.745	44.32	1.71	43.4	1.88	47.8	4.87	123.7	2.15	54.6	7.50	191
-170	J100-6060	1.875	47.63	1.870	47.50	2.13	54.1	1.95	49.5	4.16	105.7	2.38	60.5	7.20	183
-195	J100-6868	2.125	53.98	2.120	53.85	2.25	57.2	2.19	55.6	4.50	114.3	2.67	67.9	8.10	206
-220	J100-7272	2.250	57.15	2.245	57.02	2.50	63.5	2.44	62.0	4.46	113.3	2.70	68.6	8.46	215
-260	J100-7878	2.500	63.50	2.433	61.80	2.90	73.7	2.50	63.5	5.50	139.7	3.13	79.5	9.76	248

Nutted pins standard -60 and above, nutted pins available on smaller sizes.

J200 Toggles



ROD SIZE	PART NUMBER	PIN		A		B		C		D		E		F	
		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
-4	J200-1010	0.311	7.90	0.32	8.2	0.50	12.7	0.30	7.6	0.75	19.1	1.41	35.7	0.31	8.0
-6	J200-1212	0.373	9.47	0.39	9.8	0.63	15.9	0.41	10.4	1.00	25.4	1.63	41.4	0.38	9.5
-8	J200-1414	0.433	11.00	0.45	11.4	0.64	16.3	0.39	9.9	1.00	25.4	1.68	42.7	0.44	11.1
-10	J200-1616	0.495	12.57	0.52	13.2	0.78	19.8	0.50	12.7	1.25	31.8	2.05	52.1	0.50	12.7
-12	J200-2020	0.620	15.75	0.65	16.4	0.93	23.5	0.55	14.0	1.60	40.6	2.28	57.8	0.63	15.9
-15	J200-2020	0.620	15.75	0.65	16.4	0.93	23.5	0.55	14.0	1.60	40.6	2.28	57.8	0.63	15.9
-17	J200-2020	0.620	15.75	0.65	16.5	0.93	23.5	0.55	14.0	1.60	40.6	2.28	57.8	0.63	15.9
-22	J200-2424	0.745	18.92	0.77	19.6	1.19	30.2	0.91	23.1	2.00	50.8	2.63	66.7	0.75	19.1
-30	J200-2828	0.870	22.10	0.90	22.7	1.19	30.2	0.95	24.1	2.00	50.8	3.20	81.3	0.88	22.2
-40	J200-3232	0.995	25.27	1.04	26.4	1.45	36.8	1.00	25.4	2.50	63.5	3.63	92.2	1.00	25.4
-48	J200-3636	1.120	28.45	1.17	29.6	1.45	36.8	1.13	28.7	2.50	63.5	4.00	102	1.02	25.9
-60	J200-4040	1.245	31.62	1.29	32.8	1.82	46.2	1.46	37.1	3.00	76.2	5.00	127	1.25	31.8
-76	J200-4040	1.245	31.62	1.29	32.8	1.82	46.2	1.46	37.1	3.00	76.2	5.00	127	1.25	31.8
-91	J200-4444	1.370	34.80	1.42	36.1	1.82	46.2	1.51	38.4	3.00	76.2	5.60	142	1.33	33.8
-115	J200-5050	1.558	39.57	1.63	41.4	2.25	57.2	1.98	50.2	3.75	95.3	6.18	157	1.52	38.6
-150	J200-5656	1.745	44.32	1.81	46.1	2.43	61.7	2.32	58.9	4.00	101.6	7.09	180	1.63	41.3
-170	J200-6060	1.870	47.50	1.93	49.0	3.13	79.5	2.54	64.6	5.00	127.0	7.20	183	1.90	48.3
-195	J200-6868	2.120	53.85	2.19	55.6	3.35	85.1	2.28	57.8	5.50	139.7	7.53	191	2.00	50.8
-220	J200-7272	2.245	57.02	2.38	60.5	3.70	94.0	2.81	71.4	6.00	152.4	8.16	207	2.27	57.7
-260	J200-7878	2.433	61.80	2.50	63.5	3.50	88.9	2.92	74.3	6.00	152.4	7.52	191	2.43	61.6

Nutted pins standard -60 and above, nutted pins available on smaller sizes.

2. Rod Rigging

Tangs

Each mast design is unique and mast making today is more advanced than ever. Regardless of the design, the interface of the mast and the rigging system is always critical to the safety and performance of the yacht and its crew. Navtec's range of tangs provides solutions for managing that interface.

K200 External Stemball Tang

An economical method of attaching rigging with stemballs to the mast. Can be used with rod or wire. Rod installations are used in conjunction with F220 Stemballs and F400 washers (not included).

ROD SIZE	PART NUMBER	STEMBALL PART NUMBER	WASHER PART NUMBER	A		B		C		D		WEIGHT	
				in	mm	in	mm	in	mm	in	mm	lbs	kg
-4	K200-006	F220-004	F400-04-06	2.73	69.2	1.13	28.6	4.10	104.1	3.60	91.4	0.20	0.09
-6	K200-006	F220-006	F400-06-06	2.73	69.2	1.13	28.6	4.10	104.1	3.60	91.4	0.20	0.09
-8	K200-012	F220-008	F400-08-12	3.75	95.3	1.50	38.1	5.75	146.1	5.05	128.3	0.42	0.19
-10	K200-012	F220-010	F400-08-12	3.75	95.3	1.50	38.1	5.75	146.1	5.05	128.3	0.42	0.19
-12	K200-012	F220-012	F400-12-12	3.75	95.3	1.50	38.1	5.75	146.1	5.05	128.3	0.42	0.19
-15	K200-030	F220-015	F400-17-30	5.00	127.0	2.00	50.8	7.50	190.5	6.70	170.2	1.11	0.50
-17	K200-030	F220-017	F400-17-30	5.00	127.0	2.00	50.8	7.50	190.5	6.70	170.2	1.11	0.50
-22	K200-030	F220-022	F400-22-30	5.00	127.0	2.00	50.8	7.50	190.5	6.70	170.2	1.11	0.50
-30	K200-030	F220-030	F400-30-30	5.00	127.0	2.00	50.8	7.50	190.5	6.70	170.2	1.11	0.50
-40	K200-060	F220-040	F400-40-60	6.88	174.6	2.80	71.1	10.53	267.3	9.40	238.8	3.26	1.48
-48	K200-060	F220-048	F400-48-60	6.88	174.6	2.80	71.1	10.53	267.3	9.40	238.8	3.26	1.48
-60	K200-060	F220-060	F400-60-60	6.88	174.6	2.80	71.1	10.53	267.3	9.40	238.8	3.26	1.48
-76	K200-076	F220-076L	F400-76-76	9.25	235.0	3.75	95.3	14.25	362.0	12.50	317.5	7.50	3.40
-91	K200-115	F220-091L	F400-91-A2	11.52	292.7	4.50	114.3	17.50	444.5	15.38	390.5	15.3	6.92
-115	K200-115	F220-115L	F400-A2-A2	11.52	292.7	4.50	114.3	17.50	444.5	15.38	390.5	15.3	6.92
-150	K200-150	F220-150L	F400-A5-A5	13.39	340.1	5.25	133.4	20.50	520.7	18.04	458.2	32.5	14.7

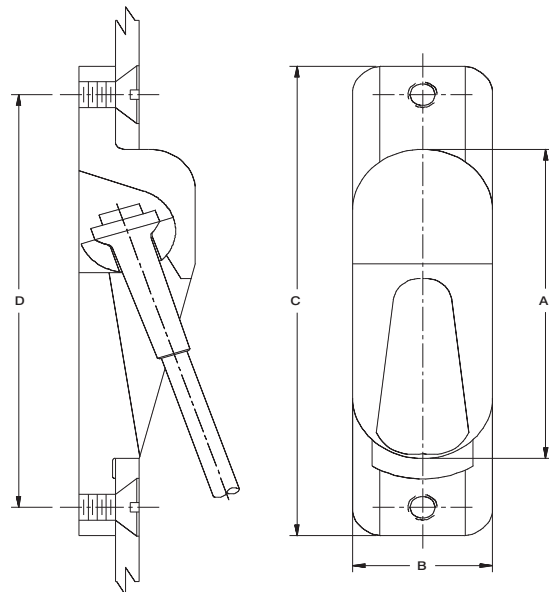
F220 stemballs require F400 cup washers for use with these tangs. F400 cup washer is sold separately. Sizes K200-060 and larger are shipped without fastener holes.

K200 External Stemball Tang

WIRE SIZE	TANG PART NUMBER	SWAGE STEMBALL PART NUMBER	SWAGELESS STEMBALL PART NUMBER	WASHER PART NUMBER
3mm	K200-006	N641-M03	N060-M03	F400-04-06
1/8"	K200-006	N641-04	N060-04	F400-04-06
4mm	K200-006	N641-M04	N060-M04	F400-06-06
5/32"	K200-006	N641-05	N060-05	F400-06-06
3/16"	K200-012	N641-06	N060-06	N640-06
5mm	K200-012	N641-M05	N060-M05	N640-M05
7/32"	K200-012	N641-07	N060-07	N640-07
6mm	K200-012	N641-M06	N060-M06	N640-M06
1/4"	K200-012	N641-08	N060-08	N640-08
7mm	K200-012	N641-M07	N060-M07	NONE
9/32"	K200-012	N641-09	N060-09	NONE
5/16"	K200-030	N641-10	N060-10	N640-10
8mm	K200-030	N641-M08	N060-M08	N640-M12
3/8"	K200-030	N641-12	N060-12	N640-10
10mm	K200-030	N641-M10	N060-M10	N640-M12

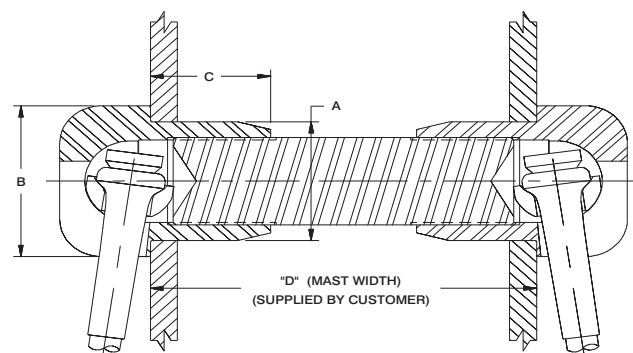
K200 Tang/C651 Tip Turnbuckle Combinations

ROD SIZE	PART NUMBER	TIP TURNBUCKLE PART NUMBER	WASHER PART NUMBER
-4	K200-006	C651-004-08B	F410-08-06
-6	K200-006	C651-006-10B	F410-10-06
-8	K200-012	C651-008-10B	F410-10-12
-10	K200-012	C651-010-12B	F410-12-12
-12	K200-012	C651-012-14B	F410-14-12
-15	K200-030	C651-015-16B	F410-16-30
-17	K200-030	C651-017-16B	F410-16-30
-22	K200-030	C651-022-20B	F410-20-30
-30	K200-030	C651-030-20B	F410-20-30
-40	K200-060	C651-402428B	F410-24-60
-48	K200-060	C651-482428B	F410-24-60
-60	K200-060	C651-602832B	F410-28-60



K150 Micro Stemball Tangs

Features small mast cut-out and stainless steel tie bar. Includes a pair of Micro Stemballs and cup washers in each assembly.



ROD SIZE	PART NUMBER	A		B		C		D			WEIGHT	
		in	mm	in	mm	in	mm	in	mm	lbs	kg	
-4	K150-004	0.745	18.92	1.00	25.4	0.65	16.6	4"		0.49	0.22	
-6	K150-006	0.812	20.62	1.06	27.0	0.75	19.1	4"		0.62	0.28	
-8	K150-008	0.932	23.67	1.19	30.2	0.85	21.6	4"		0.90	0.41	
-10	K150-010	0.995	25.27	1.25	31.8	1.00	25.4	6"		1.27	0.58	
-12	K150-012	1.184	30.07	1.44	36.5	1.09	27.6	6"		1.79	0.81	
-15	K150-015	1.305	33.15	1.63	41.3	1.19	30.1	6"		2.33	1.06	
-17	K150-017	1.305	33.15	1.63	41.3	1.19	30.1	6"		2.42	1.10	
-22	K150-022	1.490	37.85	1.88	47.6	1.25	31.8	6"		3.34	1.51	
-30	K150-030	1.870	47.50	2.38	60.3	1.66	42.3	6"		5.93	2.69	
-40	K150-040	2.065	52.45	2.50	63.5	1.90	48.3	8"		8.45	3.83	
-48	K150-048	2.248	57.10	2.87	72.8	1.94	49.2	8"		11.3	5.11	
-60	K150-060	2.625	66.68	3.30	83.8	2.28	57.8	8"		16.4	7.42	
-76	K150-076L	2.995	76.07	3.75	95.3	3.23	82.0	8"		22.4	10.2	
-91	K150-091L	3.245	82.42	4.00	101.6	3.53	89.6	8"		27.5	12.5	
-115	K150-115L	3.745	95.12	4.75	120.7	4.05	102.8	10"		44.1	20.0	
-150	K150-150L	4.120	104.65	5.00	127.0	4.51	114.7	10"		54.0	24.5	
-170	K150-170L	4.495	114.17	5.75	146.1	4.89	124.2	12"		80.0	36.3	
-195	K150-195L	4.745	120.52	6.00	152.4	5.52	140.2	12"		86.0	39.0	
-220	K150-220L	4.995	126.87	6.75	171.5	5.79	147.1	14"		112	50.8	
-260	K150-260L	5.495	139.57	7.25	184.2	6.25	158.8	14"		138	62.6	
-320	K150-320L	6.495	164.97	8.50	215.9	7.33	186.2	16"		225	102	
-400	K150-400L	7.495	190.37	10.00	254.0	8.45	214.6	18"		360	163	

One assembly includes 2 caps, 2 cup washers, 2 stemballs & 1 tie bar.

K150 Tang/C651 Tip Turnbuckle Combinations

Based on the K150 design system, works with cup washer for use with tip turnbuckles. Commonly used on jumper assemblies.

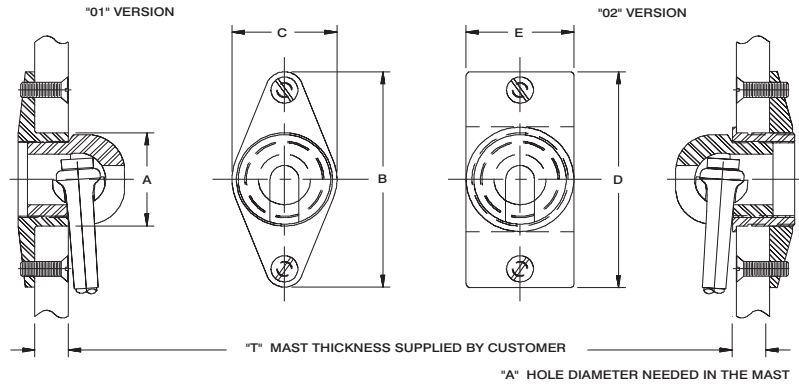
ROD SIZE	PART NUMBER	TIP TURNBUCKLE PART NUMBER	CUP WASHER PART NUMBER.	A		B		C	
				in	mm	in	mm	in	mm
-4	K150-004S08	C651-004-08B	K151-02-004S08	0.745	18.92	1.00	25.4	0.65	16.6
-6	K150-006S10	C651-006-10B	K151-02-006S10	0.812	20.62	1.06	27.0	0.75	19.1
-8	K150-008S10	C651-008-10B	K151-02-0082	0.932	23.67	1.19	30.2	0.85	21.6
-10	K150-010S12	C651-010-12B	K151-02-010S12	0.995	25.27	1.25	31.8	1.00	25.4
-12	K150-012S14	C651-012-14B	K151-02-012S14	1.184	30.07	1.44	36.5	1.09	27.6
-15	K150-017S16	C651-015-16B	K151-02-017S16	1.305	33.15	1.63	41.3	1.19	30.1
-17	K150-017S16	C651-017-16B	K151-02-017S16	1.305	33.15	1.63	41.3	1.19	30.1
-22	K150-030S20	C651-022-20B	K151-02-030S20	1.870	47.50	2.38	60.3	1.66	42.3
-30	K150-030S20	C651-030-20B	K151-02-030S20	1.870	47.50	2.38	60.3	1.66	42.3
-40	K150-048S24	C651-402428B	K401-02-482	2.248	57.10	2.87	72.8	1.94	49.2
-48	K150-048S24	C651-482428B	K401-02-482	2.248	57.10	2.87	72.8	1.94	49.2
-60	K150-060S28	C651-602832B	K151-02-060S28	2.625	66.68	3.30	83.8	2.28	57.8

One assembly includes 2 caps, 2 cup washers & 1 tie bar.

2. Rod Rigging

K550 Micro Stemball Tangs

Provides a custom fit for every mast by matching the height of the backing-plate sleeve to the mast wall thickness (T). Excellent choice for both carbon and aluminum masts. The cap is constructed from high-strength stainless steel alloy; backing plate is made of 316 stainless for unsurpassed corrosion resistance. The K550 is also available in a Grand Prix clamping version, which uses the same cap, but with aluminum backing plate and clamp bushing.



ROD SIZE	PART NUMBER (316 Backing plate)	PART NUMBER (Alloy Backing plate)	A		B		C		D		E		WEIGHT	
			(Hole needed in the mast) in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg
-6	K550-006-01	K550-006-02	1.245	31.62	2.81	71.4	1.38	34.9	2.88	73.0	1.63	41.3	0.34	0.15
-8	K550-008-01	K550-008-02	1.245	31.62	2.81	71.4	1.38	34.9	2.88	73.0	1.63	41.3	0.34	0.15
-10	K550-010-01	K550-010-02	1.370	34.80	3.32	84.3	1.50	38.1	3.38	85.7	1.63	41.3	0.48	0.22
-12	K550-012-01	K550-012-02	1.370	34.80	3.32	84.3	1.50	38.1	3.38	85.7	1.63	41.3	0.48	0.22
-15	K550-015-01	K550-015-02	1.370	34.80	3.32	84.3	1.50	38.1	3.38	85.7	1.63	41.3	0.48	0.22
-17	K550-017-01	K550-017-02	1.870	47.50	4.59	116.6	2.00	50.8	4.50	114.3	2.25	57.2	1.12	0.51
-22	K550-022-01	K550-022-02	1.870	47.50	4.59	116.6	2.00	50.8	4.50	114.3	2.25	57.2	1.12	0.51
-30	K550-030-01	K550-030-02	2.183	55.45	5.12	130.0	2.38	60.5	5.13	130.2	2.50	63.5	1.77	0.80
-40	K550-040-01	K550-040-02	2.495	63.37	5.73	145.5	2.73	69.3	5.75	146.1	3.00	76.2	2.74	1.24
-48	K550-048-01	K550-048-02	2.995	76.07	6.37	161.8	3.28	83.3	6.38	161.9	3.50	88.9	4.00	1.81
-60	K550-060-01	K550-060-02	3.120	79.25	7.22	183.4	3.41	86.6	7.50	190.5	4.00	101.6	5.13	2.33
-76	K550-076-01	K550-076-02	3.620	91.95	8.40	213.4	4.00	101.6	8.40	213.4	4.50	114.3	7.85	3.56
-91	K550-091-01	K550-091-02	4.120	104.65	9.00	228.6	4.50	114.3	9.00	228.6	5.00	127.0	11.0	4.99
-115	K550-115-01	K550-115-02	4.745	120.52	10.20	259.1	5.18	131.6	10.20	259.1	6.00	152.4	15.1	6.85
-150	K550-150-01	K550-150-02	5.120	130.05	11.96	303.8	5.59	142.0	12.00	304.8	7.00	177.8	20.9	9.48
-170	K550-170-01	K550-170-02	5.745	145.92	12.74	323.6	6.27	159.3	12.74	323.6	7.50	190.5	27.5	12.5

All version of K550 use F235 micro stemballs ordered separately.

01 - Assembly includes 1 cap, 1 cup washer & 1 backing plate.

02 - Assemblies include 1 cap, 1 cup washer, 1 clamp bushing & 1 alloy backing plate. Backing plates supplied unhardcoated & without mounting holes.

05- Assemblies same as 02 but cap and clamp bushing made from titanium.

K550 Tang/C651 Tip Turnbuckle Combinations

The K550 and C651 can be integrated together to provide micro-adjustment, greater articulation and resistance to wear.

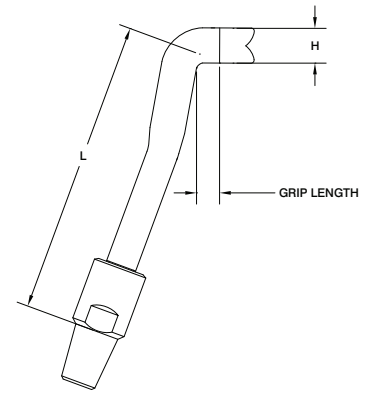
ROD SIZE	PART NUMBER	TIP TURNBUCKLE PART NUMBER	CUP WASHER PART NUMBER	A		B		C	
				in	mm	in	mm	in	mm
-4	K550-008S08	C651-004-08B	K551-02-008S08	1.245	31.62	2.81	71.4	1.38	34.9
-6	K550-008S10	C651-006-10B	K151-02-0082	1.245	31.62	2.81	71.4	1.38	34.9
-8	K550-008S10	C651-008-10B	K151-02-0082	1.245	31.62	2.81	71.4	1.38	34.9
-10	K550-012S12	C651-010-12B	K151-02-0121	1.370	34.80	3.32	84.3	1.50	38.1
-12	K550-012S14	C651-012-14B	K151-02-012S14	1.370	34.80	3.32	84.3	1.50	38.1
-15	K550-022S16	C651-015-16B	K551-02-022S16	1.870	47.50	1.63	41.3	1.19	30.1
-17	K550-022S16	C651-017-16B	K551-02-022S16	1.870	47.50	1.63	41.3	1.19	30.1
-22	K550-030S20	C651-022-20B	K151-02-030S20	2.183	55.45	5.12	130.0	2.38	60.5
-30	K550-030S20	C651-030-20B	K151-02-030S20	2.183	55.45	5.12	130.0	2.38	60.5
-40	K550-048S24	C651-402428B	K401-02-482	2.995	76.07	6.37	161.8	3.28	83.3
-48	K550-048S24	C651-482428B	K401-02-482	2.995	76.07	6.37	161.8	3.28	83.3
-60	K550-060S28	C651-602832B	K151-02-060S28	3.120	79.25	7.22	183.4	3.41	86.6

One assembly includes 1 cap, 1 cup washer & 1 Stainless Steel backing plate.

02 Version available upon request.

N074 Rod T Terminals

After extensive research and testing, Navtec has developed a T fitting to be used in the rod applications up to -22. With highly-detailed construction techniques, these T's are stronger than our wire T fittings. Made from high-quality 316 Stainless and Nitronic 50, these T's have a longer fatigue life than any other T on the market today.



ROD SIZE	PART NUMBER	H		* GRIP LENGTH		L**		BACKING PLATE	RETAINING PLUG
		in	mm	in	mm	in	mm		
-4	N074-04	0.44	11.1	0.20	5.1	3.9	99	N740-M05	N742-M05
-6	N074-06	0.56	14.3	0.26	6.6	4.6	118	N740-M07	N742-M07
-8	N074-08	0.56	14.3	0.26	6.6	4.7	118	N740-M07	N742-M07
-10	N074-10	0.56	14.3	0.26	6.6	4.7	119	N740-M07	N742-M07
-12	N074-12	0.70	17.8	0.32	8.1	6.2	157	N740-M10	N742-M10
-15	N074-15	0.70	17.8	0.32	8.1	6.2	158	N740-M10	N742-M10
-17	N074-17	0.70	17.8	0.32	8.1	6.3	161	N740-M10	N742-M10
-22	N074-22	0.70	17.8	0.48	12.2	7.1	180	N740-M10	N742-M10

* Grip Length is the distance from the bearing point to the inside corner of the 90 degree bend.

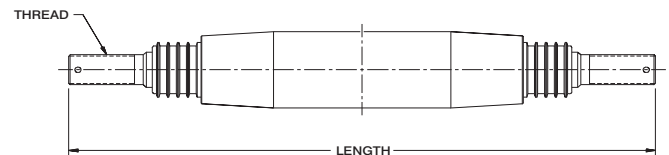
** Length measured from rod seat to bearing surface.

Rod T-terminals are designed for shroud angles of 10 to 20 degrees.

T-terminals for use with thicker mast walls are available on a custom basis.

P100 Navtec Rigging Insulator

Designed for higher loading from rod rigging, the Navtec insulator delivers superior insulating and short-prevention characteristics in even the harshest conditions. Allows for better antenna tuning and radio performance.



ROD SIZE	INSULATOR BODY PART NUMBER	THREAD SIZE	LENGTH		WEIGHT		ROD CAP PART NUMBER	EYE PART NUMBER	JAW PART NUMBER
			in	mm	(lbs)	(kg)			
-6	P100-10A	1/2-20	11.43	290	1.13	0.51	P101-08-006A	G700-010J01	H120-161414
-8	P100-10A	1/2-20	11.43	290	1.13	0.51	P101-08-008A	G700-010J01	H120-161616
-10	P100-10A	1/2-20	11.43	290	1.13	0.51	P101-08-010A	G700-010J01	H120-161616
-12	P100-17A	5/8-18	13.67	347	2.88	1.31	P101-08-012A	G700-017J01	H120-202020
-15	P100-17A	5/8-18	13.67	347	2.88	1.31	P101-08-015A	G700-017J01	H120-202020
-17	P100-17A	5/8-18	13.67	347	2.88	1.31	P101-08-017A	G700-017J01	H120-202020
-22	P100-22A	3/4-16	14.95	380	3.81	1.73	P101-08-022A	G700-022J01	H120-242424
-30	P100-30A	7/8-14	16.50	419	5.50	2.49	P101-08-030A	G700-030J01	H120-282828
-40	P100-40A	1-12	18.11	460	7.38	3.35	P101-08-040A	G700-040J01	H120-323232
-48	P100-48A	1-12	19.64	499	10.8	4.90	P101-08-048A	G700-048J01	H120-323636
-60	P100-60A	1 1/4-12	22.55	573	16.0	7.26	P101-08-060A	G700-060-01	H120-404040
-76	P100-76A	1 3/8-12	24.41	620	19.0	8.62	P101-08-076L	G700-075	H120-444040
-91	P100-91A	1 1/2-12	26.82	681	28.0	12.7	P101-08-091L	G700-090	H120-484444
-115	P100-115A	1 3/4-12	27.39	696	38.0	17.2	P101-08-115L	G700-115	H120-565050

Resistance \geq 100 m

Capacitance \approx 60 pf

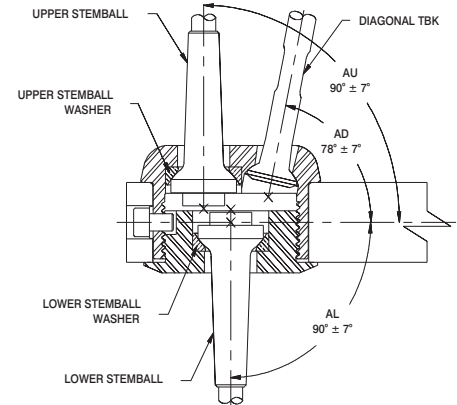
Electrical breakdown \geq 8000v wet or dry (doused w/salt water & drained for approx. 1 Second).

Tip Cups

Navtec spreader tip cups are engineered for weight reduction and enduring strength. The range of product sizes and designs provides a solution for sailboats of any length.

L400-001 Tip Cups

Economical and flexible, the L400 is ideal for smaller boats in the 30-foot LOA range. Two-piece modular design will accept most rod combinations up to -15 rod. Makes discontinuous rigging affordable for 24- to 36-foot boats.



LOWER ROD SIZE	LOWER STEMBALL PART NUMBER	LOWER WASHER PART NUMBER	UPPER ROD SIZE	UPPER STEMBALL PART NUMBER	UPPER WASHER PART NUMBER	DIAGONAL ROD SIZE	DIAGONAL TURNBUCKLE PART NUMBER
-4	F220-004	L401-03-041	-4	F220-004	L401-03-041	-4	C651-004-10B
-6	F220-006	L401-03-061	-4	F220-004	L401-03-041	-4	C651-004-10B
			-6	F220-006	L401-03-061	-4	C651-004-10B
			-6	F220-006	L401-03-061	-6	C651-006-10B
-8	F220-008	L401-03-101	-4	F220-004	L401-03-041	-4	C651-004-10B
			-6	F220-006	L401-03-061	-4	C651-004-10B
			-6	F220-006	L401-03-061	-6	C651-006-10B
			-8	F220-008	L401-03-101	-4	C651-004-10B
			-8	F220-008	L401-03-101	-6	C651-006-10B
			-8	F220-008	L401-03-101	-8	C651-008-10B
-10	F220-010	L401-03-101	-4	F220-004	L401-03-041	-4	C651-004-10B
			-6	F220-006	L401-03-061	-4	C651-004-10B
			-6	F220-006	L401-03-061	-6	C651-006-10B
			-8	F220-008	L401-03-101	-4	C651-004-10B
			-8	F220-008	L401-03-101	-6	C651-006-10B
			-8	F220-008	L401-03-101	-8	C651-008-10B
			-10	F220-010	L401-03-101	-4	C651-004-10B
			-10	F220-010	L401-03-101	-6	C651-006-10B
			-10	F220-010	L401-03-101	-8	C651-008-10B
-12	F235-012	L401-03-122	-6	F220-006	L401-03-061	-4	C651-004-10B
			-6	F220-006	L401-03-061	-6	C651-006-10B
			-8	F220-008	L401-03-101	-4	C651-004-10B
			-8	F220-008	L401-03-101	-6	C651-006-10B
			-8	F220-008	L401-03-101	-8	C651-008-10B
			-10	F220-010	L401-03-101	-4	C651-004-10B
			-10	F220-010	L401-03-101	-6	C651-006-10B
			-10	F220-010	L401-03-101	-8	C651-008-10B
			-12	F235-012	L401-03-122	-4	C651-004-10B
			-12	F235-012	L401-03-122	-6	C651-006-10B
			-12	F235-012	L401-03-122	-8	C651-008-10B
-15	F235-012-02	L401-03-122	-8	F220-008	L401-03-101	-4	C651-004-10B
			-8	F220-008	L401-03-101	-6	C651-006-10B
			-8	F220-008	L401-03-101	-8	C651-008-10B
			-10	F220-010	L401-03-101	-4	C651-004-10B
			-10	F220-010	L401-03-101	-6	C651-006-10B
			-10	F220-010	L401-03-101	-8	C651-008-10B
			-12	F235-012	L401-03-122	-4	C651-004-10B
			-12	F235-012	L401-03-122	-6	C651-006-10B
			-12	F235-012	L401-03-122	-8	C651-008-10B

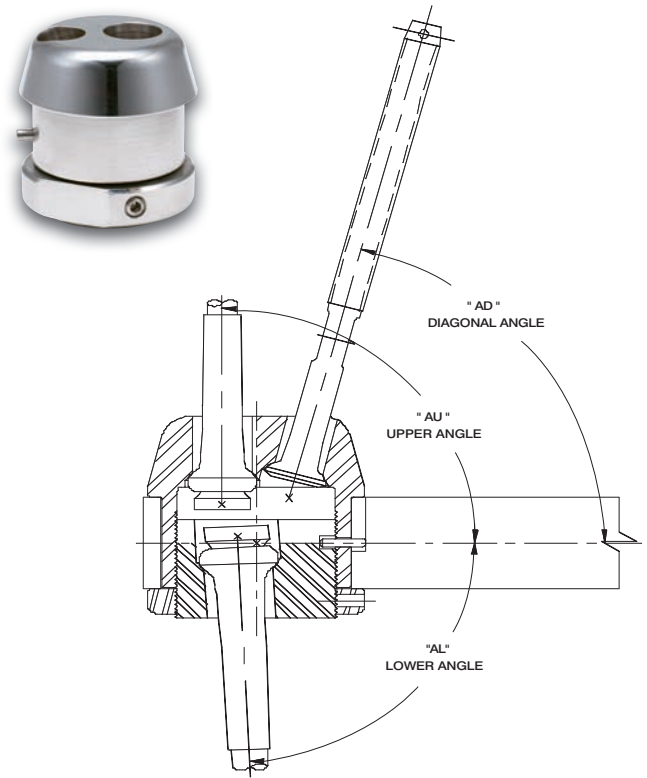
One L400-001 tipcup assembly includes tipcup plug, body & locking screw (no washers). F220 stemballs, F235 stemballs & L401-03-XXX washers are sold separately.

L500 Tip Cups

The standard in the Navtec line of spreader end tip cups. Incorporates Navtec Micro Stemballs for superior fatigue resistance. Fits completely inside the spreader to reduce sail chafe. Three-piece design ensures ease of installation.

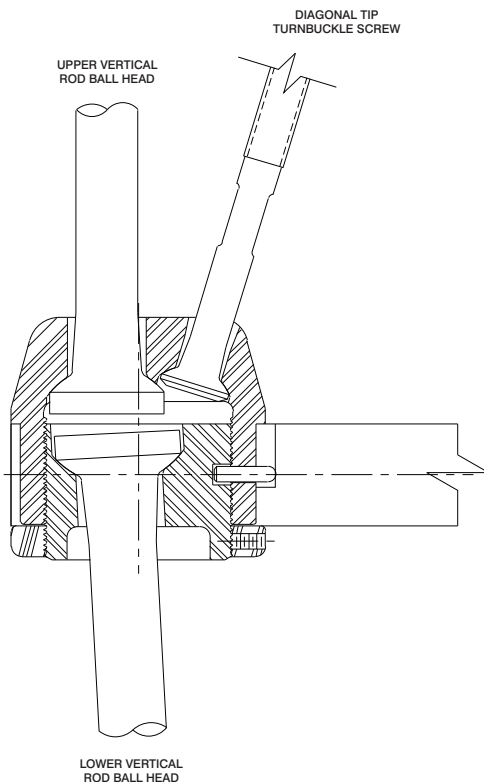
TIP CUP PART NUMBER	LOWER SHROUD ANGLE AL	UPPER SHROUD ANGLE AU	DIAGONAL SHROUD ANGLE AD
L500-XXYYZZ01	87° ± 3°	90° ± 3°	75° ± 3°
L500-XXYYZZ02	87° ± 3°	90° ± 3°	80° ± 3°
L500-XXYYZZ03	87° ± 3°	90° ± 3°	70° ± 3°
L500-XXYYZZ04	90° ± 3°	90° ± 3°	75° ± 3°
L500-XXYYZZ05	90° ± 3°	90° ± 3°	80° ± 3°
L500-XXYYZZ06	90° ± 3°	90° ± 3°	70° ± 3°
L500-XXYYZZ07	84° ± 3°	90° ± 3°	75° ± 3°
L500-XXYYZZ08	84° ± 3°	90° ± 3°	80° ± 3°
L500-XXYYZZ09	84° ± 3°	90° ± 3°	70° ± 3°
L500-XXYYZZ10	OUT OF RANGE	OUT OF RANGE	OUT OF RANGE
L500-XXYYZZ11	OF STANDARD	OF STANDARD	OF STANDARD
-----	ANGLES FROM	ANGLES FROM	ANGLES FROM
L500-XXYYZZ99	81° - 93°	87° - 93°	67° - 83°

"XX" represents the lower vertical rod dash size (22,30,40,48,60,76 etc).
 "YY" represents the upper vertical rod dash size (22,30,40,48,60,76 etc).
 "ZZ" represents the diagonal tip turnbuckle screw size (10,12,14,16,20,24, etc).



L622 / L822 Grand Prix Ball Head Tip Cups

Available in N50 (L822) or titanium (L622), Navtec's Grand Prix line of race tip cups uses ball head geometry on the rods to eliminate the need for stem balls, reducing the weight and overall size and windage. For part numbers, please contact Navtec with a rig plan.



L834 / L534 Micro Tip Cups

Available in N50 (L834) or titanium (L534) to reduce size and weight, each tip cup is designed to complement the specification of the rig plan angles for optimal performance. Use in conjunction with the F235 Stem Ball on the verticals, for maximum articulation and life span. For part numbers, please contact Navtec with a rig plan.



2. Rod Rigging

Turnbuckles for Rod Rigging

Turnbuckles are a critical part of Navtec's rod rigging systems. They are designed to complement Navtec rod design and are made from 316 Stainless Steel for strength and corrosion resistance. Like all Navtec rod rigging system components, our terminals are polished to a gleaming finish to complete the Navtec look.

Turnbuckles C550

The industry standard. Fully machined body. Center screw design allows for ease of adjustment under load. Nickel plated bronze screw prevents galling.



Turnbuckles C550 (-22 & Smaller)

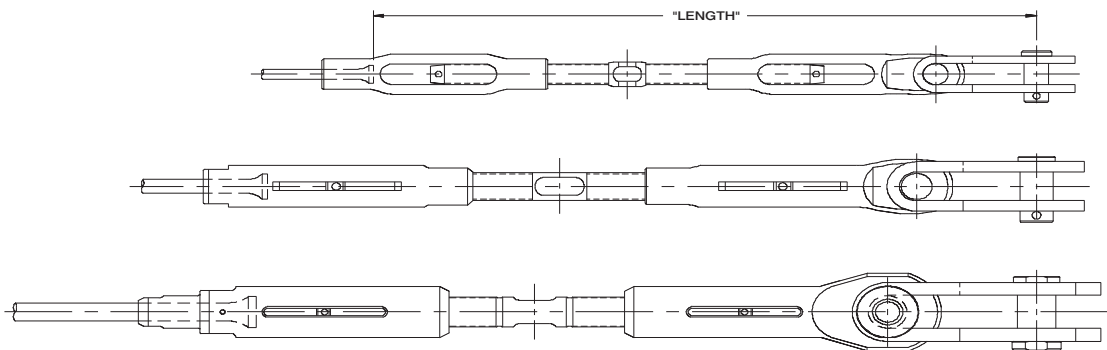


Turnbuckles C550 (-22 & Larger)

ROD SIZE	PART NUMBER	PIN SIZE		LENGTH OPEN		LENGTH CLOSED		WEIGHT	
		in	mm	in	mm	in	mm	lbs	kg
-4	C550-041012	0.371	9.42	11.57	294	8.29	211	0.47	0.21
-6	C550-061214	0.433	11.00	12.90	328	9.33	237	0.70	0.32
-8	C550-081416	0.495	12.57	14.12	359	10.01	254	1.25	0.57
-10	C550-101616	0.495	12.57	16.15	410	11.84	301	1.66	0.75
-12	C550-121620	0.620	15.75	16.15	410	11.84	301	1.72	0.78
-15	C550-152020	0.620	15.75	18.92	481	13.82	351	3.19	1.45
-17	C550-172020	0.620	15.75	18.92	481	13.82	351	3.19	1.45
-22	C550-222424	0.745	18.92	22.16	563	16.81	427	5.51	2.50
-30	C550-302828	0.870	22.10	24.67	627	18.55	471	8.50	3.85
-40	C550-403232	0.995	25.27	26.40	671	20.29	515	11.5	5.22
-48	C550-483636	1.120	28.45	27.51	699	21.39	543	14.7	6.66
-60	C550-604040	1.245	31.62	30.64	778	23.10	587	22.9	10.4
-76	C550-763640L	1.245	31.62	33.66	855	25.92	658	23.5	10.7
-91	C550-914044L	1.370	34.80	34.53	877	26.66	677	29.7	13.5
-115	C550-A24450L	1.558	39.57	37.56	954	29.76	756	37.7	17.1
-150	C550-A55256L	1.745	44.32	40.80	1,036	32.00	813	60.6	27.5

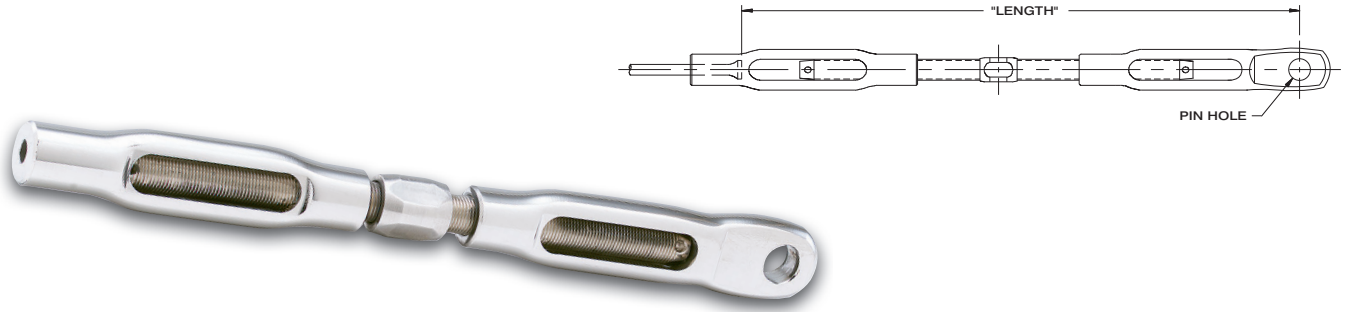
For details on toggle geometry refer to table H200 on page 28.

-60 and above are supplied as standard with nutted pins. Smaller version available with nutted pins upon request.



C560 Marine Eye Turnbuckle

Marine eye version of the C550 turnbuckle. Can be used with a reversed J100 toggle on female chainplates for articulation.

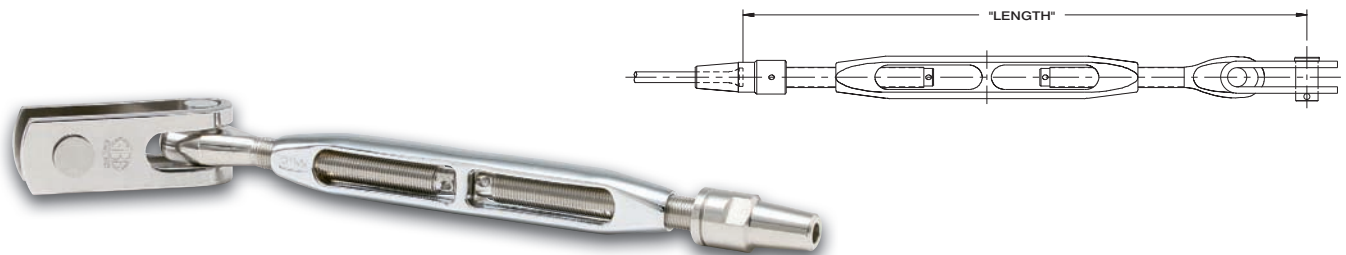


ROD SIZE	PART NUMBER	PIN HOLE		LENGTH OPEN		LENGTH CLOSED		WEIGHT	
		in	mm	in	mm	in	mm	lbs	kg
-4	C560-041010	0.318	8.08	10.3	261	6.80	173	0.35	0.16
-6	C560-061212	0.380	9.65	11.4	290	7.24	184	0.52	0.24
-8	C560-081414	0.445	11.30	12.6	319	7.86	200	0.85	0.39
-10	C560-101616	0.505	12.83	14.3	362	9.17	233	1.19	0.54
-12	C560-121616	0.505	12.83	14.3	362	9.17	233	1.19	0.54
-15	C560-152020	0.630	16.00	16.7	425	10.7	271	2.48	1.12
-17	C560-172020	0.630	16.00	16.7	425	10.7	271	2.48	1.12
-22	C560-222424	0.760	19.30	19.4	493	12.9	328	3.90	1.77
-30	C560-302828	0.885	22.48	21.7	551	14.5	368	5.95	2.70
-40	C560-403232	1.010	25.65	23.2	590	15.6	396	7.70	3.49
-48	C560-483636	1.130	28.70	24.0	610	16.4	416	9.71	4.40
-60	C560-604040	1.265	32.13	24.6	624	16.8	425	15.0	6.82
-76	C560-763638L	1.188	30.18	27.6	701	19.6	497	16.8	7.63
-91	C560-914044L	1.380	35.05	28.5	723	20.5	519	20.9	9.48
-115	C560-A24450L	1.568	39.83	30.4	772	22.4	569	30.3	13.7

For details on eye geometry refer to table G100 on page 27.

N690 Norseman Rod Turnbuckle

Combines classic Norseman open-body design with the look of a swageless terminal to produce the most economical way to rig a boat with rod.



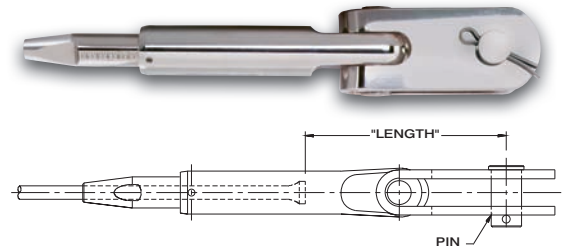
ROD SIZE	PART NUMBER	PIN SIZE		TURNBUCKLE STRENGTH		LENGTH OPEN		LENGTH CLOSED		WEIGHT	
		in	mm	lbs	kg	in	mm	in	mm	lbs	kg
-4	N690-041212	0.373	9.47	8,200	3,720	11.7	297	8.0	203	0.59	0.27
-6	N690-061414	0.433	11.00	10,900	4,940	13.2	335	9.2	234	0.87	0.39
-8	N690-081414	0.433	11.00	10,900	4,940	13.2	335	9.2	234	0.87	0.39
-8	N690-081616	0.495	12.57	14,600	6,620	15.0	381	11.0	279	1.57	0.71
-10	N690-101616	0.495	12.57	14,600	6,620	15.0	381	11.0	279	1.57	0.71
-12	N690-121616	0.495	12.57	14,600	6,620	15.2	386	10.8	274	1.57	0.71
-12	N690-122020	0.620	15.75	23,500	10,600	18.1	460	12.9	328	2.80	1.27
-15	N690-152020	0.620	15.75	23,500	10,600	18.0	457	13.0	330	2.80	1.27
-17	N690-172020	0.620	15.75	23,500	10,600	18.0	457	13.0	330	2.80	1.27
-22	N690-222424	0.745	18.92	36,500	16,500	21.1	536	15.3	389	4.90	2.22
-30	N690-302828	0.870	22.10	44,600	20,200	25.6	650	18.6	472	8.55	3.88
-40	N690-403232	0.995	25.27	59,200	26,800	29.1	739	20.1	511	12.8	5.82

For details on toggle geometry refer to table N673 on page 60.

2. Rod Rigging

C890 Toggle Turnbuckle

Originally part of Navtec's Grand Prix range, these turnbuckles are becoming more popular in every boat range. High-strength, light weight materials ensure performance without a weight penalty. Closed-body design means no cover is needed to protect today's costly sheets and lines. Calibrated for accurate tuning. Available in marine eye, barrel pin, and toggle versions.



ROD SIZE	PART NUMBER	PIN SIZE		LENGTH OPEN		LENGTH CLOSED		WEIGHT	
		in	mm	in	mm	in	mm	lbs	kg
-8	C890-08201403	0.433	11.00	6.97	177	2.97	75	1.14	0.52
-10	C890-10241603	0.495	12.57	7.52	191	3.52	89	1.36	0.6
-12	C890-12241603	0.495	12.57	7.61	193	3.61	92	1.36	0.6
-15	C890-15242003	0.620	15.75	7.80	198	3.80	97	1.89	0.9
-17	C890-17242003	0.620	15.75	7.80	198	3.80	97	1.89	0.9
-22	C890-22322403	0.745	18.92	9.79	249	4.79	122	3.89	1.8
-30	C890-30362803	0.870	22.10	11.3	287	5.31	135	6.00	2.72
-40	C890-40403203	0.995	25.27	11.8	300	5.82	148	8.22	3.7
-48	C890-48443603	1.120	28.45	12.4	315	6.40	163	10.6	4.8
-60	C890-60484003	1.245	31.62	15.6	395	7.57	192	15.7	7.12
-76	C890-76564003L	1.245	31.62	15.9	403	7.87	200	18.5	8.39
-91	C890-916444L	1.370	34.80	17.1	435	9.21	234	30.8	14.0
-115	C890-A26850L	1.558	39.57	17.4	442	9.4	239	46.3	21.0
-150	C890-A58056AL	1.745	44.32	19.4	491	11.8	300	68.7	31.1
-170	C890-A78460L	1.870	47.50	20.4	518	12.1	307	84.5	38.3
-195	C890-A98868L	2.120	53.85	21.0	533	12.0	305	95.4	43.3
-220	C890-B29672L	2.245	57.02	21.7	551	12.7	322	113	51.2
-260	C890-B6A0478L	2.433	61.80	21.8	554	12.8	326	144	65.3
-320	C890-C2A1280L	2.495	63.37	24.5	623	14.5	369	195	88.4
-400	C890-D0A4088L	2.745	69.72	30.9	786	18.9	481	290	132

-60 and above are supplied as standard with nutted pins. Smaller version available with nutted pins upon request. For details on toggle geometry refer to table H200 on page 28.

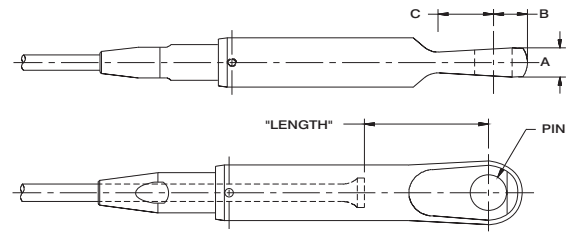
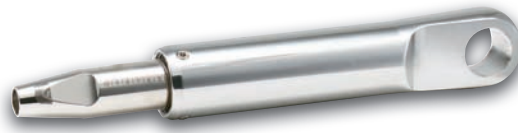
C890 Barrel Pin Turnbuckle

Featuring adjustable barrel pin terminals, this is the ultimate lightweight turnbuckle, and is used on America's Cup yachts, Grand Prix racing yachts, One-Designs, Maxi's, and high-performance cruisers. Crafted from Nitronic 50 stainless steel, and calibrated for accurate tuning.

ROD SIZE	PART NUMBER	PIN SIZE		LENGTH OPEN		LENGTH CLOSED		WEIGHT	
		in	mm	in	mm	in	mm	lbs	kg
-8	C890-08201403	0.433	11.00	6.97	177	2.97	75	1.14	0.52
-10	C890-10241603	0.495	12.57	7.52	191	3.52	89	1.36	0.6
-12	C890-12241603	0.495	12.57	7.61	193	3.61	92	1.36	0.6
-15	C890-15242003	0.620	15.75	7.80	198	3.80	97	1.89	0.9
-17	C890-17242003	0.620	15.75	7.80	198	3.80	97	1.89	0.9
-22	C890-22322403	0.745	18.92	9.79	249	4.79	122	3.89	1.8
-30	C890-30362803	0.870	22.10	11.3	287	5.31	135	6.00	2.72
-40	C890-40403203	0.995	25.27	11.8	300	5.82	148	8.22	3.7
-48	C890-48443603	1.120	28.45	12.4	315	6.40	163	10.6	4.8
-60	C890-60484003	1.245	31.62	15.6	395	7.57	192	15.7	7.12
-76	C890-76564003L	1.245	31.62	15.9	403	7.87	200	18.5	8.39
-91	C890-916444L	1.370	34.80	17.1	435	9.21	234	30.8	14.0
-115	C890-A26850L	1.558	39.57	17.4	442	9.4	239	46.3	21.0
-150	C890-A58056AL	1.745	44.32	19.4	491	11.8	300	68.7	31.1
-170	C890-A78460L	1.870	47.50	20.4	518	12.1	307	84.5	38.3
-195	C890-A98868L	2.120	53.85	21.0	533	12.0	305	95.4	43.3
-220	C890-B29672L	2.245	57.02	21.7	551	12.7	322	113	51.2
-260	C890-B6A0478L	2.433	61.80	21.8	554	12.8	326	144	65.3
-320	C890-C2A1280L	2.495	63.37	24.5	623	14.5	369	195	88.4
-400	C890-D0A4088L	2.745	69.72	30.9	786	18.9	481	290	132

Barrel pin tapers allow +/- 4 degree articulation. Larger angles available upon request. "02" versions for -76 and larger incorporate new, larger pin sizes.

C890 Barrel Pin Turnbuckle Eye Dimensions



ROD SIZE	PART NUMBER	PIN SIZE		A		B		C	
		in	mm	in	mm	in	mm	in	mm
-8	C890-BP08003	0.423	10.74	0.403	10.24	0.438	11.13	0.656	16.66
-10	C890-BP10003	0.485	12.32	0.465	11.81	0.590	14.99	0.763	19.38
-12	C890-BP12003	0.485	12.32	0.465	11.81	0.590	14.99	0.763	19.38
-15	C890-BP15003	0.610	15.49	0.590	14.99	0.668	16.97	0.942	23.93
-17	C890-BP17003	0.610	15.49	0.590	14.99	0.668	16.97	0.942	23.93
-22	C890-BP22003	0.735	18.67	0.715	18.16	0.750	19.05	1.125	28.58
-30	C890-BP30003	0.860	21.84	0.839	21.31	0.933	23.70	1.313	33.35
-40	C890-BP40003	0.985	25.02	0.963	24.46	1.088	27.64	1.500	38.10
-48	C890-BP48003	1.110	28.19	1.153	29.29	1.090	27.69	1.640	41.66
-60	C890-BP60003	1.235	31.37	1.210	30.73	1.244	31.60	1.821	46.25
-76	C890-BP76002L	1.423	36.14	1.408	35.76	1.713	43.51	1.980	50.29
-91	C890-BP91002L	1.610	40.89	1.595	40.51	2.074	52.68	2.126	54.00
-115	C890-BPA2002L	1.730	43.94	1.720	43.69	2.210	56.13	2.455	62.36
-150	C890-BPA5002L	1.985	50.42	1.970	50.04	2.405	61.09	3.010	76.45
-170	C890-BPA7002L	2.110	53.59	2.095	53.21	2.800	71.12	3.040	77.22
-195	C890-BPA9002L	2.235	56.77	2.220	56.39	2.800	71.12	3.190	81.03
-220	C890-BPB2002L	2.360	59.94	2.345	59.56	3.100	78.74	3.440	87.38
-260	C890-BPB6002L	2.610	66.29	2.595	65.91	3.515	89.28	3.720	94.49
-320	C890-BPC2002L	2.860	72.64	2.845	70.00	3.750	95.25	4.300	110.0
-400	C890-BPD0002L	3.235	82.17	3.220	80.00	3.510	89.15	4.450	113.0

"02" Versions for -76 and larger incorporate new, larger pin sizes.

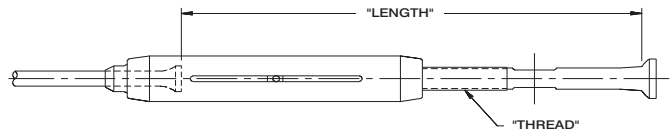


High strength, light weight Navtec turnbuckles enhance performance

2. Rod Rigging

C651 Tip Turnbuckle

Series 500 tip turnbuckle. Chrome plated bronze body and high-strength Nitronic 50 ball head screw. Stainless steel nose. For sizes -30 and larger, the body is stainless steel and the nose is bronze.

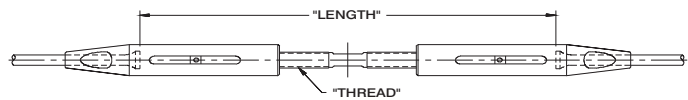


ROD SIZE	PART NUMBER	PORT SIZE	THREAD SIZE	LENGTH OPEN		LENGTH CLOSED		WEIGHT	
				in	mm	in	mm	lbs	kg
-4	C651-004-08B	8 (1/4)	1/4-28	6.3	161	4.3	110	0.18	0.08
-4	C651-004L08B	8 (1/4)	1/4-28	9.1	232	7.1	181	0.21	0.10
-4	C651-004-10B	10 (5/16)	5/16-24	6.8	173	4.6	117	0.38	0.17
-4	C651-004L10B	10 (5/16)	5/16-24	9.8	249	7.6	193	0.43	0.20
-6	C651-006-10B	10 (5/16)	5/16-24	6.8	173	4.6	117	0.38	0.17
-6	C651-006L10B	10 (5/16)	5/16-24	9.8	249	7.6	193	0.43	0.20
-8	C651-008-10B	10 (5/16)	5/16-24	6.8	173	4.6	117	0.38	0.17
-8	C651-008L10B	10 (5/16)	5/16-24	9.8	249	7.6	193	0.43	0.20
-10	C651-010-12B	12 (3/8)	3/8-24	8.6	217	6.1	154	0.56	0.25
-10	C651-010L12B	12 (3/8)	3/8-24	12.3	312	9.8	249	0.66	0.30
-12	C651-012-14B	14 (7/16)	7/16-20	9.6	244	6.8	173	0.84	0.38
-12	C651-012L14B	14 (7/16)	7/16-20	14.0	355	11.2	283	1.00	0.45
-15	C651-015-16B	16 (1/2)	1/2-20	10.2	260	7.2	184	1.25	0.57
-15	C651-015L16B	16 (1/2)	1/2-20	14.6	371	11.6	295	1.45	0.66
-17	C651-017-16B	16 (1/2)	1/2-20	10.2	260	7.2	184	1.25	0.57
-17	C651-017L16B	16 (1/2)	1/2-20	14.6	371	11.6	295	1.45	0.66
-22	C651-022-20B	20 (5/8)	5/8-18	14.1	359	10.5	267	2.04	0.93
-22	C651-022L20B	20 (5/8)	5/8-18	17.1	435	13.5	343	2.29	1.04
-30	C651-030-20B	20 (5/8)	5/8-18	14.2	360	10.6	269	2.69	1.22
-30	C651-030L20B	20 (5/8)	5/8-18	17.1	435	13.5	343	2.94	1.33
-40	C651-402428S	24 (3/4)	7/8-14	14.4	367	10.5	267	4.71	2.14
-48	C651-482428S	24 (3/4)	7/8-14	14.4	367	10.5	267	4.71	2.14
-60	C651-602832S	28 (7/8)	1-12	15.3	389	11.1	282	5.93	2.69
-76	C651-763236SL	32 (1)	1 1/8-12	20.7	525	15.3	388	10.3	4.67
-91	C651-913640SL	36 (1 1/8)	1 1/4-12	23.4	594	16.2	411	13.1	5.94
-115	C651-A23842SL	38 (1 3/16)	1 5/16-12	24.1	613	16.9	430	18.3	8.30
-150	C651-A54448SL	44 (1 3/8)	1 1/2-12	25.9	658	17.5	445	28.7	13.0
-170	C651-A75256SL	52 (1 5/8)	1 3/4-12	27.0	686	19.0	483	32.0	14.5

Adapter washers are required when the turnbuckle is used in a port larger than the designated port sizes above.

C882 In-line Turnbuckle

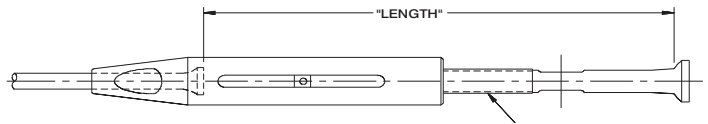
Navtec's Nitronic 50 alternative to a long screw-tip turnbuckle in the tangs on jumpers. Center screw design allows for higher loads inherent in jumper applications. Bronze bushings ensure ease of adjustment under load. Allows for smaller tang to be used.



ROD SIZE	PART NUMBER	THREAD SIZE	TURNBUCKLE STRENGTH		LENGTH OPEN		LENGTH CLOSED		WEIGHT	
			lbs	kg	in	mm	in	mm	lbs	kg
-4	C882-004L08	1/4-28	7,600	3,450	9.8	250	6.4	162	0.26	0.12
-6	C882-006L10	5/16-24	10,500	4,760	10.5	266	6.7	170	0.54	0.24
-8	C882-008L10	5/16-24	10,500	4,760	10.5	266	6.7	170	0.54	0.24
-10	C882-010L12	3/8-24	15,200	6,900	11.1	282	7.1	180	0.66	0.30
-12	C882-012L14	7/16-20	18,500	8,390	11.3	287	7.5	190	0.93	0.42
-15	C882-015L16	1/2-20	28,600	12,900	11.6	295	7.5	191	1.14	0.52
-17	C882-017L16	1/2-20	28,600	12,900	11.7	296	7.6	192	1.14	0.52
-22	C882-022L20	5/8-18	44,100	20,000	15.4	390	9.5	240	1.96	0.89
-30	C882-030L20	5/8-18	44,100	20,000	15.9	404	9.8	248	2.33	1.06
-40	C882-040L24	3/4-16	76,000	34,500	20.1	511	12.7	323	3.96	1.80
-48	C882-048L24	3/4-16	76,000	34,500	20.3	516	12.7	323	4.59	2.08
-60	C882-060L28	7/8-14	115,000	52,200	21.6	549	13.6	344	8.20	3.72

C880 & C680 Tip Turnbuckle

Navtec's Nitronic 50 performance range. Calibrated for accurate tuning. High-strength material body and Nitronic 50 ball-head screw for lighter weight than the C651. Bronze bushing ensures ease of adjustment under high loads



ROD SIZE	PART NUMBER	PORT SIZE	THREAD SIZE	LENGTH OPEN		LENGTH CLOSED		C880 WEIGHT		C680 WEIGHT	
				in	mm	in	mm	lbs	kg	lbs	kg
-4	C880-004-08	D341-08	1/4-28	6.0	153	4.3	110	0.15	0.07	0.13	0.06
-4	C880-004L08	D341-08	1/4-28	8.8	224	7.1	181	0.18	0.08	0.16	0.07
-6	C880-006-10	D341-10	5/16-24	6.3	161	4.4	113	0.27	0.12	0.22	0.10
-6	C880-006L10	D341-10	5/16-24	9.3	237	7.4	189	0.32	0.15	0.27	0.12
-8	C880-008-10	D341-10	5/16-24	6.3	161	4.4	113	0.27	0.12	0.22	0.10
-8	C880-008L10	D341-10	5/16-24	9.3	237	7.4	189	0.34	0.15	0.27	0.12
-10	C880-010-12	D341-12	3/8-24	8.0	203	6.0	152	0.39	0.18	0.39	0.17
-10	C880-010L12	D341-12	3/8-24	11.7	298	9.7	247	0.49	0.22	0.48	0.22
-12	C880-012-14	D341-14	7/16-20	8.5	215	6.6	168	0.54	0.24	0.61	0.28
-12	C880-012L14	D341-14	7/16-20	12.8	326	10.9	276	0.70	0.32	0.76	0.35
-15	C880-015-16	D341-16	1/2-20	9.2	234	7.2	182	0.72	0.33	0.78	0.35
-15	C880-015L16	D341-16	1/2-20	13.6	345	11.5	293	0.93	0.42	0.98	0.44
-17	C880-017-16	D341-16	1/2-20	9.2	234	7.2	182	0.72	0.33	0.77	0.35
-17	C880-017L16	D341-16	1/2-20	13.6	345	11.5	293	0.93	0.42	0.98	0.44
-22	C880-022-20	D341-20	5/8-18	13.1	334	10.2	259	1.31	0.59	1.44	0.65
-22	C880-022L20	D341-20	5/8-18	16.1	410	13.2	335	1.56	0.71	1.66	0.75
-30	C880-030-20	D341-20	5/8-18	13.3	339	10.3	260	1.56	0.71	1.77	0.80
-30	C880-030L20	D341-20	5/8-18	16.3	415	13.3	337	1.81	0.82	1.99	0.90
-40	C880-402428	D341-24	7/8-14	14.5	369	10.8	274	3.40	1.54	2.50	1.14
-48	C880-482428	D341-24	7/8-14	14.5	369	10.8	274	3.90	1.77	2.90	1.32
-60	C880-602832	D341-28	1-12	16.1	408	12.0	306	5.50	2.49	N/A	N/A
-76	C880-763236L	D341-32	1 1/8-12	20.5	521	15.5	394	6.99	3.17	N/A	N/A
-91	C880-913640L	D341-36	1 1/4-12	22.2	564	16.2	412	10.1	4.56	N/A	N/A
-115	C880-A23842L	D341-38	1 5/16-12	23.7	602	16.7	424	12.8	5.80	N/A	N/A
-150	C880-A54448L	D341-44	1 1/2-12	22.7	576	18.2	462	28.7	13.0	N/A	N/A

C880 bodies made from N50, Change prefix to C680 for titanium body version.

ADAPTER WASHERS ARE REQUIRED WHEN THE TURNBUCKLE IS USED IN A PORT LARGER THAN THE DESIGNATED PORT SIZES ABOVE.

Rigging Accessories

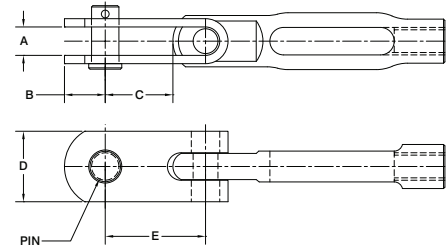
D531 & D530 Eye End with Toggle



D530 Turnbuckle Eye with Toggle
(right hand thread)

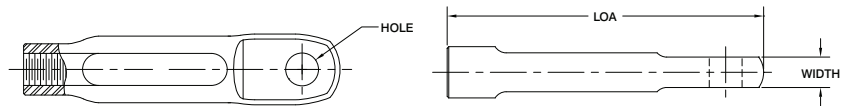


D531 Turnbuckle Eye with Toggle
(left hand thread)



ROD SIZE	PART NUMBER	THREAD SIZE	PIN		A		B		C		D	
			in	mm	in	mm	in	mm	in	mm	in	mm
-4	D531-1012	5/16"	0.373	9.47	0.32	8.1	0.53	13.5	1.04	26.4	0.75	19.1
-6	D531-1214	3/8"	0.433	11.00	0.39	9.9	0.69	17.5	1.09	27.7	1.00	25.4
-8	D531-1416	7/16"	0.495	12.57	0.45	11.4	0.70	17.8	1.12	28.4	1.00	25.4
-10	D531-1616	1/2"	0.495	12.57	0.52	13.2	0.78	19.8	1.39	35.3	1.25	31.8
-12	D531-1620	1/2"	0.620	15.75	0.53	13.5	0.84	21.3	1.43	36.3	1.38	35.1
-15/17	D531-2020	5/8"	0.620	15.75	0.65	16.4	0.93	23.5	1.61	40.9	1.60	40.6
-22	D531-2424	3/4"	0.745	18.92	0.77	19.6	1.19	30.2	1.74	44.2	2.00	50.8
-30	D531-2828	7/8"	0.870	22.10	0.90	22.7	1.19	30.2	2.16	54.9	2.00	50.8
-40	D531-3232	1"	0.995	25.27	1.04	26.4	1.45	36.8	2.53	64.3	2.50	63.5
-48	D531-3636	1 1/8"	1.120	28.45	1.17	29.6	1.45	36.8	2.82	71.6	2.50	63.5
-60	D531-4040	1 1/4"	1.245	31.62	1.29	32.8	1.82	46.2	3.60	91.4	3.00	76.2

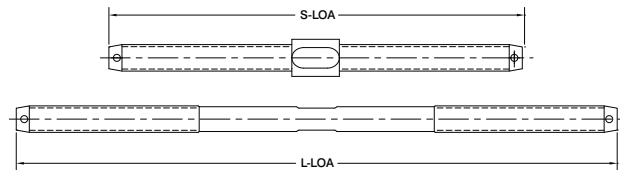
D540 & D541 Eye End



ROD SIZE	PART NUMBER	THREAD SIZE	HOLE		A		LOA	
			in	mm	in	mm	in	mm
-4	D541-1010	5/16"	0.313	7.95	0.28	7.1	3.55	90.2
-6	D541-1212	3/8"	0.370	9.40	0.34	8.7	4.05	102.9
-8/-10/-12	D541-1616	1/2"	0.495	12.57	0.47	11.9	5.23	132.8
-15/-17	D541-2020	5/8"	0.620	15.75	0.59	15.1	6.17	156.7
-22	D541-2424	3/4"	0.745	18.92	0.72	18.3	7.86	199.6
-30	D541-2828	7/8"	0.870	22.10	0.83	21.0	8.66	220.0
-40	D541-3232	1"	0.995	25.27	0.90	22.9	9.31	236.5
-48	D541-3636	1 1/8"	1.120	28.45	0.98	24.9	9.68	245.9
-60	D541-4040	1 1/4"	1.245	31.62	1.15	29.2	9.87	250.7

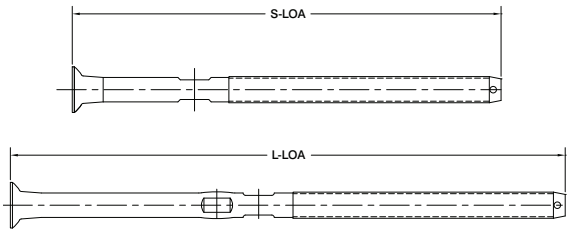
Standard lower end for C560 is the D541 LH eye end. Right version use D540 prefix.

D320 Turnbuckle Screws



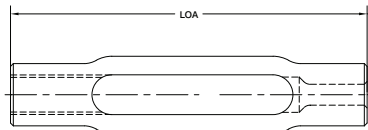
ROD SIZE	THREAD	STANDARD SCREW PART NUMBER	S-LOA		LONG SCREW PART NUMBER	L-LOA		THREAD LENGTH	
			in	mm		in	mm	in	mm
-4	1/4"-28	D320-S08	5.44	138.2	D320-L08	7.25	184.2	2.72	69.1
-4	5/16"-24	D320-S10	6.01	152.7	D320-L10	8.56	217.5	2.63	66.8
-6	3/8"-24	D320-S12	6.75	171.5	D320-L12	9.31	236.5	2.95	74.9
-8	7/16"-20	D320-S14	7.35	186.7	D320-L14	9.88	250.8	3.20	81.3
-10/-12	1/2"-20	D320-S16	8.39	213.1	D320-L16	11.88	301.6	3.65	92.7
-15/-17	5/8"-18	D320-S20	9.80	248.9	D320-L20	14.13	358.8	4.26	108.2
-22	3/4"-16	D320-S24	11.50	292.1	D320-L24	16.50	419.1	5.06	128.5
-30	7/8"-14	D320-S28	13.00	330.2	D320-L28	19.00	482.6	5.69	144.5
-40	1"-12	D320-S32	14.13	358.8	D320-L32	22.13	562.0	6.25	158.8
-48	1 1/8"-12	D320-S36	14.75	374.7	D320-L36	22.75	577.9	6.50	165.1
-60	1 1/4"-12	D320-S40	15.25	387.4	D320-L40	23.25	590.6	6.75	171.5

D340 Tip Turnbuckle Screws



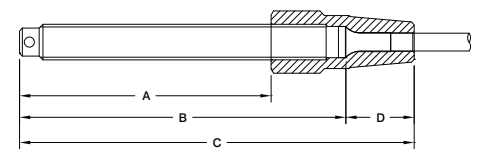
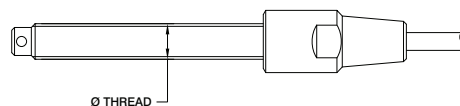
ROD SIZE	THREAD	STANDARD SCREW PART NUMBER	S-LOA		LONG SCREW PART NUMBER	L-LOA		THREAD LENGTH	
			in	mm		in	mm	in	mm
-4	1/4"-28	D340-S08	4.20	106.7	D340-L08	7.00	177.8	2.72	69.1
-4/-6/-8	5/16"-24	D340-S10	4.40	111.8	D340-L10	7.40	188.0	3.00	76.2
-10	3/8"-24	D340-S12	5.85	148.6	D340-L12	9.60	243.8	3.74	95.0
-12	7/16"-20	D340-S14	6.50	165.1	D340-L14	10.86	275.8	4.37	111.0
-15/-17	1/2"-20	D340-S16	7.00	177.8	D340-L16	11.38	289.1	4.38	111.3
-22/-30	5/8"-18	D340-S20	10.34	262.6	D340-L20	13.25	336.6	6.50	165.1
-40/-48	7/8"-14	D340-S2428	10.92	277.4	D340-L2428	14.92	379.0	6.55	166.4
-60	1"-12	D340-S2832	11.75	298.5	D340-L2832	16.92	429.8	6.30	160.0

D500 Rod Body



ROD SIZE	PART NUMBER	THREAD SIZE	LOA	
			in	mm
-4	D500-004-10	5/16"	3.17	80.5
-6	D500-006-12	3/8"	3.60	91.4
-8	D500-008-14	7/16"	3.94	100.1
-10	D500-010-16	1/2"	4.58	116.3
-12	D500-012-16	1/2"	4.58	116.3
-15	D500-015-20	5/8"	5.52	140.2
-17	D500-017-20	5/8"	5.52	140.2
-22	D500-022-24	3/4"	6.48	164.6
-30	D500-030-28	7/8"	7.35	186.7
-40	D500-040-32	1"	8.14	206.8
-48	D500-048-36	1 1/8"	8.75	222.3
-60	D500-060-40	1 1/4"	8.97	227.8

N090 Norseman Rod Studs



PART NUMBER	ROD	THREAD	A		B		C		D		RIGGING SCREW WEIGHT	
			mm	in	mm	in	mm	in	mm	in	kg	lb
N090-0412	-4	3/8	68.00	2.68	83.50	3.29	101.00	3.98	17.50	0.69	0.27	0.60
N090-0614	-6	7/16	79.00	3.11	101.50	4.00	123.00	4.84	21.50	0.85	0.40	0.88
N090-0814	-8	7/16	75.50	2.97	104.00	4.09	128.50	5.06	25.00	0.98	0.40	0.88
N090-0816	-8	1/2	88.00	3.46	116.50	4.59	141.50	5.57	25.00	0.98	0.71	1.57
N090-1016	-10	1/2	90.00	3.54	116.00	4.57	141.00	5.55	25.00	0.98	0.71	1.57
N090-1216	-12	1/2	84.00	3.31	113.50	4.47	138.00	5.43	25.00	0.98	0.71	1.57
N090-1220	-12	5/8	101.50	4.00	128.00	5.04	156.50	6.16	28.50	1.12	1.27	2.80
N090-1520	-15	5/8	101.50	4.00	128.00	5.04	157.00	6.18	28.50	1.12	1.27	2.80
N090-1720	-17	5/8	95.50	3.76	128.50	5.06	157.00	6.18	28.50	1.12	1.27	2.80
N090-2224	-22	3/4	113.50	4.47	150.00	5.91	184.00	7.24	34.00	1.34	2.23	4.92

Stainless Steel Turnbuckle Covers

Stainless steel turnbuckle covers add the finishing touch to your boat. Covers for all turnbuckles come with a black Delrin tip to grip the rod or wire and a supporting gasket which threads onto the turnbuckle screw.

D550 Turnbuckle Cover



ROD SIZE	WIRE SIZE	WIRE SIZE	COVER PART NUMBER	NAVTEC ROD OR WIRE TURNBUCKLE PART NUMBER	GIBB METRIC WIRE TURNBUCKLE PART NUMBER	GIBB IMPERIAL WIRE TURNBUCKLE PART NUMBER	GIBB ROD TURNBUCKLE PART NUMBER	TUBE I.D.		LENGTH*	
								in	mm	in	mm
-8			D550-CA-008	C550-081416			N690-081414	1.055	26.80	21.7	550
-8			D550-CA-008	C550-081616			N690-081616	1.055	26.80	21.7	550
		7/32	D550-CA-008			N673-071414		1.055	26.80	21.7	550
	6 mm		D550-CA-008		N673-M061414			1.055	26.80	21.7	550
		1/4	D550-CA-008	C500-081416		N673-081414		1.055	26.80	21.7	550
		1/4	D550-CA-008			N673-081616		1.055	26.80	21.7	550
-10			D550-CA-010	C550-101616			N690-101616	1.055	26.80	21.7	550
	7 mm	9/32	D550-CA-010		N673-M071414	N673-091414		1.055	26.80	21.7	550
	7 mm	9/32	D550-CA-010	C500-091616	N673-M071616	N673-091616		1.055	26.80	21.7	550
-12			D550-CA-012	C550-121620			N690-121616	1.055	26.80	23.9	606
	8 mm	5/16	D550-CA-012	C500-101620	N673-M081616	N673-101616		1.055	26.80	23.9	606
-12			D550-CA-015				N690-122020	1.305	33.15	25.3	642
-15			D550-CA-015	C550-152020			N690-152020	1.305	33.15	25.3	642
-17			D550-CA-017	C550-172020			N690-172020	1.305	33.15	25.3	642
	8 mm	5/16	D550-CA-017		N673-M082020	N673-102020		1.305	33.15	25.3	642
		3/8	D550-CA-017	C500-122020		N673-122020		1.305	33.15	25.3	642
-22			D550-CA-022	C550-222424				1.305	33.15	27.1	688
	10 mm		D550-CA-022		N673-M102020			1.305	33.15	27.1	688
		7/16	D550-CA-0437	C500-142424				1.305	33.15	27.1	688
-22			D550-CA-022N				N690-222424	1.527	38.79	31.7	804
-30			D550-CA-030	C550-302828				1.527	38.79	31.7	804
		7/16	D550-CA-030			N673-142424		1.527	38.79	31.7	804
	12 mm		D550-CA-0500		N673-M122424			1.527	38.79	31.7	804
		1/2	D550-CA-0500	C500-162828		N673-162424		1.527	38.79	31.7	804
-40			D550-CA-040	C550-403232				1.620	41.15	37.1	942
	14 mm	9/16	D550-CA-040	C500-182828				1.620	41.15	37.1	942
		5/8	D550-CA-0625	C500-203232				1.620	41.15	37.1	942
-30			D550-CA-030N				N690-302828	1.902	48.31	39.8	1,010
-48			D550-CA-048	C550-483636				1.902	48.31	39.8	1,010
	14 mm	9/16	D550-CA-048		N673-M142828	N673-182828		1.902	48.31	39.8	1,010
-40			D550-CA-040N				N690-403232	2.130	54.10	42.9	1,089
-60			D550-CA-060	C550-604040				2.130	54.10	42.9	1,089
	16 mm	5/8	D550-CA-060		N673-M163232	N673-203232		2.130	54.10	42.9	1,089
-76			D550-CA-076	C550-763640L				2.130	54.10	45.5	1,155
		3/4	D550-CA-076	C500-244040				2.130	54.10	45.5	1,155
-91			D550-CA-091	C550-914044L				2.370	60.20	47.5	1,205
	19 mm	3/4	D550-CA-091		N673-M193636	N673-243636		2.370	60.20	47.5	1,205
-115			D550-CA-115	C550-A24450L				2.620	66.55	52.5	1,334
	22 mm	7/8	D550-CA-115		N673-M224040	N673-284040		2.620	66.55	52.5	1,334

*Length is the internal length of Turnbuckle Cover.



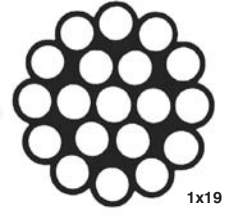
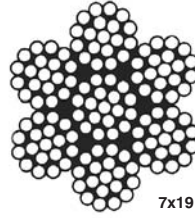
3. Wire Rigging

Machined to the highest quality, Navtec wire rigging and Norsemen wire terminations are specified by boat builders and sailors world wide. A proven track record in strength and durability makes Navtec the premium choice for continuous wire rigging.

3. Wire Rigging

Stainless Steel Wire

Composed of high-tensile 316 Stainless Steel, Navtec Wire Rigging is used in standing and running rigging. It is constructed to unlay and relay easily, and our dimensions and tensile grades meet or exceed BS MA 29 tolerances for nominal diameter, tensile strength, and breaking-force thresholds.



1x19 Stainless Steel Wire (Standard Rigging) Dimensions & Part Numbers

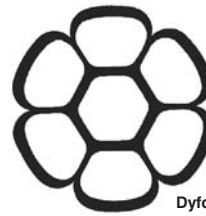
PART NUMBER	NOMINAL DIAMETER		MINIMUM BREAKING LOAD		APPROXIMATE WEIGHT		STRETCH	
	mm	in	kg	lbs	kg/100m	lb/100ft	mm/mm/1000kg	in/in/1000lb
S19-M02	2	-	320	705	1.95	1.31	0.028961	0.0131642
S19-M025	2.5	3/32	500	1100	3.05	2.05	0.018535	0.0084251
S19-M03	3	-	720	1590	4.49	3.02	0.012872	0.0058510
S19-04	-	1/8	720	1590	4.49	3.02	0.012872	0.0058510
S19-M04	4	5/32	1280	2820	7.81	5.25	0.007378	0.0033537
S19-06	-	3/16	1800	3970	10.6	7.12	0.005080	0.0023091
S19-M05	5	-	2000	4400	12.2	8.20	0.004627	0.0021032
S19-07	-	7/32	2470	5440	15.1	10.1	0.003744	0.0017018
S19-M06	6	-	2880	6350	17.6	11.8	0.003224	0.0014655
S19-08	-	1/4	3220	7100	19.4	13.0	0.002873	0.0013059
S19-M07	7	9/32	3550	7800	23.9	16.1	0.002274	0.0010336
S19-M08	8	5/16	4640	10300	31.2	21.0	0.001833	0.0008332
S19-12	-	3/8	6580	14500	43.2	29.0	0.001277	0.0005805
S19-M10	10	-	7250	16000	48.8	32.8	0.001157	0.0005259
S19-M11	11	7/16	8770	19340	59.1	39.7	0.000936	0.0004255
S19-M12	12	-	10400	22930	70.3	47.2	0.000806	0.0003664
S19-16	-	1/2	11650	25680	79.3	53.3	0.000718	0.0003264
S19-M14	14	9/16	14180	31260	95.7	64.3	0.000566	0.0002573
S19-M16	16	5/8	18560	40920	125	84.0	0.000460	0.0002091
S19-M19	19	3/4	21620	47660	176	118	0.000319	0.0001450
S19-M22	22	7/8	29070	64090	236	159	0.000235	0.0001068
S19-M26	26	1	40600	89500	330	222	0.000180	0.0000818
S19-M28	28	1 1/8	52600	115960	383	257	0.000142	0.0000645
S19-M30	30	1 3/16	58800	129600	443	298	0.000127	0.0000577
S19-M32	32	1 1/4	62800	138450	500	336	0.000115	0.0000523

7x19 Stainless Steel Wire (Running Rigging) Dimensions & Part Numbers

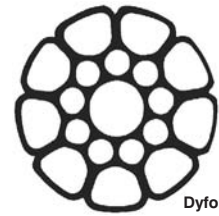
PART NUMBER	NOMINAL DIAMETER		MINIMUM BREAKING LOAD		APPROXIMATE WEIGHT		STRETCH	
	mm	in	kg	lbs	kg/100m	lb/100ft	mm/mm/1000kg	in/in/1000lb
S719-M02	2	-	226	498	1.53	1.03	0.065672	0.0298511
S719-003	2.5	3/32	355	783	2.38	1.60	0.042030	0.0191047
S719-M03	3	-	510	1120	3.34	2.24	0.029188	0.0132671
S719-004	-	1/8	510	1120	3.34	2.24	0.026059	0.0118449
S719-M04	4	5/32	907	2000	5.94	3.99	0.016418	0.0074628
S719-006	-	3/16	1280	2820	8.41	5.65	0.011582	0.0052644
S719-M05	5	-	1420	3130	9.29	6.24	0.010508	0.0047762
S719-007	-	7/32	1750	3860	11.50	7.73	0.008509	0.0038677
S719-M06	6	-	2040	4500	13.40	9.00	0.007297	0.0033168
S719-008	-	1/4	2290	5050	15.00	10.08	0.006515	0.0029612
S719-M07	7	9/32	2780	6130	18.20	12.23	0.005361	0.0024368
S719-M08	8	5/16	3630	8000	23.80	15.99	0.004105	0.0018657
S719-012	-	3/8	5150	11300	33.70	22.65	0.002895	0.0013161
S719-M10	10	-	5670	12500	37.20	25.00	0.002627	0.0011940
S719-M12	12	-	8160	18000	53.50	35.95	0.001824	0.0008292
S719-016	-	1/2	9150	20200	59.90	40.25	0.001629	0.0007403
S719-M14	14	9/16	11100	24500	72.80	48.92	0.001340	0.0006092
S719-M16	16	5/8	13600	30000	99.00	66.52	0.001026	0.0004664

Dyform Wire

Dyform's low-stretch characteristic makes it a high-performance solution for yachts and dinghies. The integrated strand configuration means greater density through the cross section, resulting in greater resistance to stretch and a higher breaking load than standard 1x19 wire.



Dyform 1x7



Dyform 1x19

PART NUMBER	NOMINAL DIAMETER mm	CONSTRUCTION	MINIMUM BREAKING LOAD		APPROXIMATE WEIGHT		STRETCH	
			kg	lbs	kg/100m	lb/100ft	mm/mm/1000kg	in/in/1000lb
SD07-M025	2.5	1 x 7	690	1521	3.40	2.28	0.014523	0.0066014
SD07-M03	3	1 x 7	1000	2205	4.90	3.29	0.010085	0.0045841
SD07-M035	3.5	1 x 7	1350	2976	6.70	4.50	0.007410	0.0033682
SD07-M04	4	1 x 7	1780	3924	8.80	5.91	0.005673	0.0025787
SD19-M05	5	1 x 19	2440	5379	13.50	9.07	0.003728	0.0016946
SD19-M06	6	1 x 19	3550	7826	19.40	13.04	0.002589	0.0011768
SD19-M07	7	1 x 19	4910	10825	26.00	17.47	0.001902	0.0008646
SD19-M08	8	1 x 19	6150	13558	34.50	23.18	0.001456	0.0006618
SD19-M10	10	1 x 19	9770	21539	54.00	36.29	0.000932	0.0004236
SD19-M12	12	1 x 19	14400	31747	80.70	54.23	0.000647	0.0002941
SD25-M14	14	1 x 25	19300	42549	115.00	77.28	0.000476	0.0002164
SD25-M16	16	1 x 25	25600	56438	147.00	98.78	0.000364	0.0001655
SD31-M19	19	1 x 31	32000	70548	207.00	139.10	0.000258	0.0001173



Navtec stainless steel wire - the high-performance solution for yachts

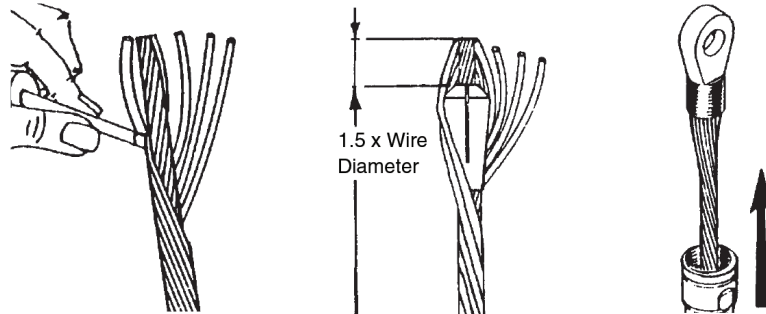
3. Wire Rigging

Norseman Swageless Terminals

Norseman terminals provide a fast, secure, corrosion-resistant end fitting on all types of wire rigging and are an ideal replacement part. They can be installed quickly and easily at sea, making them ideal for emergency repairs.

Swageless Fitting Method

No special tools required. Slip the body of the terminal over the diameter of the cable. Unlay outer wires and fit the cone over the center core. Relay the outer wires into the head of the fitting. Draw the body up to the head and screw together. Norseman terminals can be re-used, but please note that a new cone must be installed.

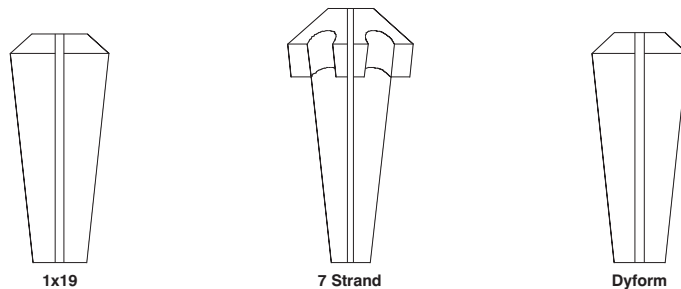


Swageless Cones Dimensions & Part Numbers

PART NUMBER	SIZE		APPROXIMATE WEIGHT		
	mm	in	1X19	7 Strand	Dyform
NCC-M025	2.5	3/32	BLUE	YELLOW	-
NCC-M03	3	1/8	NO PAINT	YELLOW	-
NCC-M04	4	5/32	NO PAINT	RED	-
NCC-06	-	3/16	GREEN	RED	-
NCC-M05	5	-	NO PAINT	RED	WHITE
NCC-07	-	7/32	BLUE	YELLOW	-
NCC-M06	6	-	NO PAINT	RED	WHITE
NCC-08	-	1/4	GREEN	YELLOW	WHITE
NCC-M07	7	9/32	NO PAINT	RED	WHITE
NCC-M08	8	5/16	NO PAINT	NO PAINT	WHITE
NCC-M09	9	-	BLUE	YELLOW	-
NCC-12	-	3/8	GREEN	YELLOW	WHITE
NCC-M10	10	-	NO PAINT	NO PAINT	WHITE
NCC-M11	11	7/16	BLUE	YELLOW	WHITE
NCC-M12	12	-	NO PAINT	NO PAINT	WHITE
NCC-16	-	1/2	GREEN	RED	WHITE
NCC-M14	14	9/16	NO PAINT	NO PAINT	WHITE
NCC-M16	16	5/8	NO PAINT	NO PAINT	WHITE
NCC-M19	19	3/4	NO PAINT	NO PAINT	WHITE
NCC-M22	22	7/8	NO PAINT	NO PAINT	-
NCC-M26	26	1	NO PAINT	NO PAINT	-
NCC-M28	28	1 1/8	NO PAINT	-	-
NCC-M30	30	1 3/16	NO PAINT	-	-
NCC-M32	32	1 1/4	NO PAINT	-	-

PART NUMBER	WIRE CONSTRUCTION
NCC-	1x19
NCS-	7 Strand
NCD-	Dyform

Swageless Cones

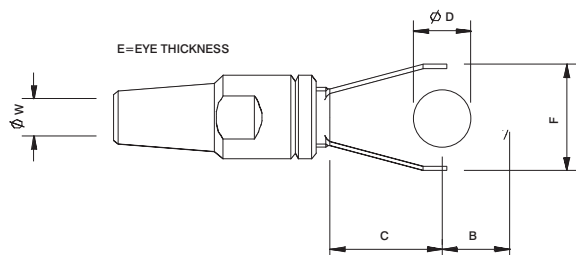


Note: this style is used on 7mm and above

N010 Swageless Eye

Made from high quality 316 Stainless Steel. Fitting available for 1 x 19, 7 strand, and Dyform wire.

N010 Swageless Eye



PART NUMBER	WIRE DIA		B		C		D		E		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
N010-M02506	2.5	3/32	7	0.276	11	0.433	4.7	0.185	5.5	0.217	13	0.512
N010-M02508	2.5	3/32	7	0.276	11	0.433	6.5	0.256	5.5	0.217	13	0.512
N010-M0308	3	1/8	7	0.276	11	0.433	6.5	0.256	5.5	0.217	13	0.512
N010-M0410	4	5/32	8.2	0.323	11	0.433	8.1	0.319	6.7	0.264	16	0.630
N010-0610	-	3/16	10	0.394	16	0.630	8.1	0.319	8	0.315	16	0.630
N010-0612	-	3/16	10	0.394	18	0.709	9.7	0.382	8	0.315	19	0.748
N010-M0510	5	-	10	0.394	16	0.630	8.1	0.319	8	0.315	16	0.630
N010-M0512	5	-	10	0.394	18	0.709	9.7	0.382	8	0.315	19	0.748
N010-0712	-	7/32	11	0.433	17	0.669	9.7	0.382	9	0.354	22	0.866
N010-0714	-	7/32	12.5	0.492	19.5	0.768	11.3	0.445	9.5	0.374	23	0.906
N010-0716	-	7/32	15	0.591	22.5	0.886	13	0.512	9.5	0.374	26	1.024
N010-M0612	6	-	11	0.433	17	0.669	9.7	0.382	9	0.354	22	0.866
N010-M0614	6	-	12.5	0.492	19	0.748	11.3	0.445	9.5	0.374	23	0.906
N010-M0616	6	-	15	0.591	22.5	0.886	13	0.512	9.5	0.374	26	1.024
N010-0812	-	1/4	11	0.433	17	0.669	9.7	0.382	9	0.354	22	0.866
N010-0814	-	1/4	12.5	0.492	19.5	0.768	11.3	0.445	9.5	0.374	23	0.906
N010-0816	-	1/4	15	0.591	22.5	0.886	13	0.512	9.5	0.374	26	1.024
N010-M0716	7	9/32	15	0.591	22	0.866	13	0.512	11	0.433	27	1.063
N010-M0816	8	5/16	15	0.591	24	0.945	13	0.512	12.5	0.492	27	1.063
N010-M0820	8	5/16	18	0.709	28	1.102	16	0.630	12.5	0.492	33	1.299
N010-1220	-	3/8	18	0.709	28	1.102	16	0.630	13.5	0.531	33	1.299
N010-M1020	10	-	18	0.709	28	1.102	16	0.630	13.5	0.531	34	1.339
N010-M1124	11	7/16	21	0.827	39	1.535	19.2	0.756	18	0.709	40	1.575
N010-M1128	11	7/16	25	0.984	41	1.614	22.5	0.886	18	0.709	47.5	1.870
N010-M1224	12	-	21	0.827	39	1.535	19.2	0.756	18	0.709	40	1.575
N010-M1228	12	-	25	0.984	41	1.614	22.5	0.886	18	0.709	47.5	1.870
N010-1624	-	1/2	21	0.827	39	1.535	19.2	0.756	18	0.709	40	1.575
N010-1628	-	1/2	25	0.984	39	1.535	22.5	0.886	18	0.709	47.5	1.870
N010-M1428	14	9/16	25	0.984	41	1.614	22.5	0.886	21	0.827	47.5	1.870
N010-M1632	16	5/8	27.5	1.083	44	1.732	25.7	1.012	24	0.945	54	2.126
N010-M1936	19	3/4	30	1.181	50	1.969	29	1.142	25.7	1.012	64	2.520
N010-M1940	19	3/4	30	1.181	50	1.969	32	1.260	25.7	1.012	64	2.520
N010-M2240	22	7/8	38	1.496	55	2.165	32	1.260	28.6	1.126	70.5	2.776
N010-M2642	26	1	42	1.654	61	2.402	33.3	1.311	31.3	1.232	75	2.953
N010-M2644	26	1	42	1.654	67	2.638	35.5	1.398	31.3	1.232	75	2.953
N010-M2844	28	1 1/8	42	1.654	67	2.638	35.5	1.398	31.3	1.232	75	2.953
N010-M2848	28	1 1/8	45	1.772	72	2.835	38.1	1.500	34.85	1.372	90	3.543

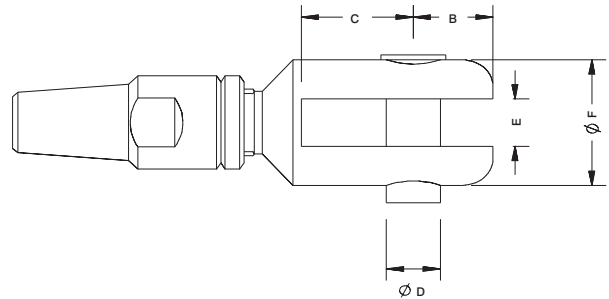
PART NUMBER	WIRE CONSTRUCTION
N010-	1x19
NO11-	7 Strand
NO12-	Dyform

3. Wire Rigging

N020 Swageless Fork

Made from high quality 316 Stainless Steel. Fitting available for 1 x 19, 7 strand, and Dyform wire.

N020 Swageless Fork Terminal

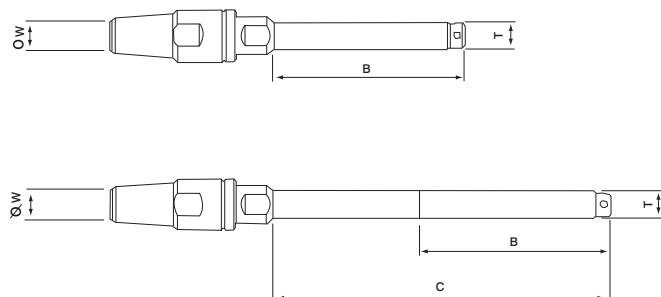


PART NUMBER	WIRE DIA		B		C		D		E		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
N020-M02508	2.5	3/32	8.00	0.31	13.00	0.51	6.30	0.25	6.30	0.25	14.00	0.55
N020-M0308	3	1/8	8.00	0.31	13.00	0.51	6.30	0.25	6.30	0.25	14.00	0.55
N020-M0410	4	5/32	10.00	0.39	16.00	0.63	7.90	0.31	7.90	0.31	19.00	0.75
N020-0610	-	3/16	10.00	0.39	16.00	0.63	7.90	0.31	7.87	0.31	19.05	0.75
N020-0612	-	3/16	12.00	0.47	19.00	0.75	9.50	0.37	9.50	0.37	22.00	0.87
N020-M0510	5	-	10.00	0.39	16.00	0.63	7.90	0.31	7.87	0.31	19.05	0.75
N020-M0512	5	-	12.00	0.47	19.00	0.75	9.50	0.37	9.50	0.37	22.00	0.87
N020-0712	-	7/32	12.00	0.47	19.00	0.75	9.50	0.37	9.50	0.37	22.00	0.87
N020-0714	-	7/32	14.00	0.55	22.00	0.87	11.10	0.44	11.10	0.44	28.50	1.12
N020-M0612	6	-	12.00	0.47	19.00	0.75	9.50	0.37	9.50	0.37	22.00	0.87
N020-M0614	6	-	14.00	0.55	22.00	0.87	11.10	0.44	11.10	0.44	28.50	1.12
N020-M0616	6	-	16.00	0.63	25.50	1.00	12.70	0.50	12.70	0.50	31.50	1.24
N020-0812	-	1/4	12.00	0.47	19.00	0.75	9.50	0.37	9.50	0.37	22.00	0.87
N020-0814	-	1/4	14.00	0.55	22.00	0.87	11.10	0.44	11.10	0.44	28.50	1.12
N020-0816	-	1/4	16.00	0.63	25.50	1.00	12.70	0.50	12.70	0.50	31.50	1.24
N020-M0716	7	9/32	16.00	0.63	25.50	1.00	12.70	0.50	12.70	0.50	31.50	1.24
N020-M0816	8	5/16	16.00	0.63	25.50	1.00	12.70	0.50	12.70	0.50	31.50	1.24
N020-M0820	8	5/16	20.00	0.79	32.00	1.26	15.80	0.62	15.80	0.62	38.00	1.50
N020-1220	-	3/8	20.00	0.79	32.00	1.26	15.80	0.62	15.80	0.62	38.00	1.50
N020-M1020	10	-	20.00	0.79	32.00	1.26	15.80	0.62	15.80	0.62	38.00	1.50
N020-M1124	11	7/16	24.00	0.94	38.00	1.50	19.00	0.75	19.00	0.75	47.50	1.87
N020-M1224	12	-	24.00	0.94	38.00	1.50	19.00	0.75	19.00	0.75	47.50	1.87
N020-M1228	12	-	28.00	1.10	44.50	1.75	22.00	0.87	22.00	0.87	54.00	2.13
N020-1624	-	1/2	24.00	0.94	38.00	1.50	19.00	0.75	19.00	0.75	47.50	1.87
N020-1628	-	1/2	28.00	1.10	44.50	1.75	22.00	0.87	22.00	0.87	54.00	2.13
N020-M1428	14	9/16	28.00	1.10	44.50	1.75	22.20	0.87	22.20	0.87	54.00	2.13
N020-M1632	16	5/8	32.00	1.26	51.00	2.01	25.40	1.00	25.40	1.00	63.50	2.50
N020-M1936	19	3/4	36.00	1.42	57.00	2.24	28.50	1.12	28.50	1.12	70.00	2.76
N020-M2240	22	7/8	40.00	1.57	63.50	2.50	31.70	1.25	31.70	1.25	76.00	2.99
N020-M2644	26	1	44.00	1.73	70.00	2.76	35.00	1.38	35.00	1.38	82.50	3.25

PART NUMBER	WIRE CONSTRUCTION
N020-	1x19
N021-	7 Strand
N022-	Dyform

N030 Swageless Stud & Swageless Long Stud

Made from high quality 316 Stainless Steel. Fitting available for 1 x 19, 7 strand, and Dyform wire.



METRIC 1x19	WIRE Ø		THREAD Ø	B		C (Long Stud)	
	mm	in	UNF	mm	in	mm	in
N030-M02508	2.5	3/32	1/4	57	2.24	-	-
N030-M0308	3	1/8	1/4	57	2.24	-	-
N030-M0410	4	5/32	5/16	48	1.89	-	-
N030-0610	-	3/16	5/16	48	1.89	100	3.94
N030-0612	-	3/16	3/8	65	2.56	115	4.53
N030-M0510	5	-	5/16	48	1.89	100	3.94
N030-M0512	5	-	3/8	65	2.56	115	4.53
N030-0712	-	7/32	3/8	65	2.56	130	5.12
N030-0714	-	7/32	7/16	75	2.95	135	5.31
N030-0716	-	7/32	1/2	83	3.27	145	5.71
N030-M0612	6	-	3/8	65	2.56	130	5.12
N030-M0614	6	-	7/16	75	2.95	135	5.31
N030-M0616	6	-	1/2	83	3.27	145	5.71
N030-0812	-	1/4	3/8	65	2.56	130	5.12
N030-0814	-	1/4	7/16	75	2.95	135	5.31
N030-0816	-	1/4	1/2	83	3.27	145	5.71
N030-M0716	7	9/32	1/2	83	3.27	145	5.71
N030-M0816	8	5/16	1/2	83	3.27	155	6.10
N030-M0820	8	5/16	5/8	98	3.86	170	6.69
N030-1220	-	3/8	5/8	98	3.86	180	7.09
N030-M1020	10	-	5/8	98	3.86	180	7.09
N030-M1124	11	7/16	3/4	115	4.53	180	7.09
N030-M1128	11	7/16	7/8	138	5.43	180	7.09
N030-M1224	12	-	3/4	115	4.53	-	-
N030-M1228	12	-	7/8	138	5.43	-	-
N030-1624	-	1/2	3/4	115	4.53	-	-
N030-1628	-	1/2	7/8	138	5.43	-	-
N030-M1428	14	9/16	7/8	138	5.43	-	-
N030-M1632	16	5/8	1	155	6.10	-	-
N030-M1936	19	3/4	1 1/8	180	7.09	-	-
N030-M2240	22	7/8	1 1/4	200	7.87	-	-
N030-M2644	26	1	1 3/8	219	8.62	-	-
N030-M2848	28	1 1/8	1 1/2	230	9.06	-	-

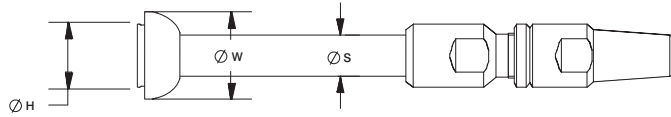
PART NUMBER	LONG VERSION	WIRE CONSTRUCTION
N030	N030L	1x19
N031	N031L	7 Strand
N032	N032L	Dyform

For LEFT HAND thread, add "LH" to the Part Number, i.e. N030-0810LH.

3. Wire Rigging

N060 Swageless Stemball

Made from high quality 316 Stainless Steel. Fitting available for 1 x 19, 7 strand, and Dyform wire.



PART NUMBER	WIRE Ø		Ø S		Ø H		CUP NO.		Ø W	
	mm	ins	mm	ins	mm	ins	Metric	Imperial	mm	ins
N060-M03	3	1/8	7.5	0.30	16.7	0.66	N640-M04	N640-04	26.5	1.04
N060-M04	4	5/32	7.5	0.30	16.7	0.66	N640-M04	N640-04	26.5	1.04
N060-M06	-	3/16	9.1	0.36	18.8	0.74	N640-M05	N640-06	26.5	1.04
N060-M05	5	-	9.1	0.36	18.8	0.74	N640-M05	N640-06	26.5	1.04
N060-M07	-	7/32	12.5	0.49	20	0.80	N640-M07	N640-08	26.5	1.04
N060-M06	6	-	12.5	0.49	20	0.80	N640-M07	N640-08	26.5	1.04
N060-M08	-	1/4	12.5	0.49	20	0.80	N640-M07	N640-08	26.5	1.04
N060-M07	7	9/32	14.3	0.56	22	0.87	N640-M07	N640-08	26.5	1.04
N060-M08	8	5/16	16.1	0.63	28	1.10	N640-M12	N640-10	34	1.34
N060-12	-	3/8	17.8	0.70	28	1.10	N640-M12	N640-10	34	1.34
N060-M10	10	-	17.8	0.70	28	1.10	N640-M12	N640-10	34	1.34

PART NUMBER	WIRE CONSTRUCTION
N060-	1x19
N061-	7 Strand
N062-	Dyform

N070 Swageless T

Made from high quality 316 Stainless Steel. Fitting available for 1 x 19, 7 strand, and Dyform wire.



PART NUMBER			WIRE Ø		HEAD HEIGHT		HEAD WIDTH		GRIP DEPTH	
Swageless Part No.	Backing Plate	Retaining Plug	mm	in	mm	in	mm	in	mm	in
N070-M025	N740-M03	N742-M03	2.5	3/32	6.3	0.25	15.5	0.61	6.0	0.24
N070-M03	N740-M03	N742-M03	3	1/8	6.3	0.25	16.6	0.65	6.0	0.24
N070-M04	N740-M04	N742-M04	4	5/32	9.0	0.35	17.5	0.69	6.4	0.25
N070-M06	N740-M06	N742-M06	-	3/16	11.1	0.44	20.0	0.79	8.0	0.31
N070-M05	N740-M05	N742-M05	5	-	11.1	0.44	20.0	0.79	8.0	0.31
N070-M07	N740-M07	N742-M07	-	7/32	14.3	0.56	28.0	1.10	8.3	0.32
N070-M06	N740-M07	N742-M07	6	-	14.3	0.56	28.0	1.10	8.3	0.32
N070-M08	N740-M08	N742-M08	-	1/4	14.3	0.56	28.0	1.10	8.3	0.32
N070-M07	N740-M07	N742-M07	7	9/32	14.3	0.56	28.0	1.10	8.3	0.32
N070-M08	N740-M10	N742-M10	8	5/16	17.8	0.70	32.0	1.26	12.0	0.47
N070-M12	N740-M10	N742-M10	-	3/8	17.8	0.70	32.0	1.26	12.0	0.47
N070-M10	N740-M10	N742-M10	10	-	17.8	0.70	32.0	1.26	12.0	0.47

For Backing Plate info see page 56.

N080 Swageless Shroud Terminal

Made from high quality 316 Stainless Steel. Fitting available for 1 x 19, 7 strand, and Dyform wire.



PART NUMBER			WIRE Ø		HEAD HEIGHT		HEAD WIDTH	
Swageless Part No.	Backing Plate	Retaining Plug	mm	in	mm	in	mm	in
N080-07	N840-07	N842-07	-	7/32	12.5	0.492	22.9	0.902
N080-M06	N840-M06	N842-M06	6	-	12.5	0.492	22.5	0.886
N080-08	N840-07	N842-07	-	1/4	12.5	0.492	22.9	0.902
N080-M07	N840-M07	N842-M08	7	9/32	14.3	0.563	29.0	1.142
N080-M08	N840-M08	N842-M08	8	5/16	16.0	0.630	29.0	1.142
N841-M09	N840-M10	N842-M10	9	-	17.8	0.701	32.5	1.280
N080-12	N840-12	N842-12	-	3/8	17.8	0.701	32.5	1.280
N080-M10	N840-M10	N842-M10	10	-	17.8	0.701	32.5	1.280
N080-14	N840-14	N842-14	11	7/16	21.3	0.839	35.0	1.378
N080-M12	N840-M12	N842-M12	12	-	21.4	0.843	39.0	1.535
N080-16	N840-14	N842-14	-	1/2	21.4	0.843	39.0	1.535

For Backing Plate info see page 57.

Wire Swage Terminals

Our swage terminals are crafted from 316 Stainless Steel for maximum corrosion resistance and are used to terminate 1x19 Stainless Steel wire, flexible wire rope, and Dyform wire. Navtec swage terminals are available in many sizes and configurations to meet all rigging needs.

Reference Table for Swage Dimensions

Detailed below is a table of BEFORE and AFTER swage dimensions. This is an essential reference point to ensure that the correct dies have been used and that the swage has been completed successfully.

WIRE DIA		DIA. BEFORE SWAGING		DIA. AFTER SWAGING		SWAGE HOLE DIA		DRILL DEPTH	
ins	mm	ins	mm	ins	mm	ins	mm	ins	mm
3/32	2.50	0.218-0.213	5.54-5.41	0.190-0.185	4.83-4.70	0.114-0.109	2.90-2.77	1.261	32.03
	3.00	0.250-0.245	6.35-6.22	0.219-0.214	5.56-5.44	0.137-0.132	3.48-3.35	1.511	38.38
1/8		0.250-0.245	6.35-6.22	0.219-0.214	5.56-5.44	0.146-0.141	3.71-3.58	1.511	38.38
5/32	4.00	0.297-0.292	7.54-7.42	0.250-0.245	6.35-6.22	0.177-0.172	4.50-4.37	1.761	44.73
3/16		0.359-0.354	9.12-8.99	0.313-0.308	7.95-7.82	0.208-0.203	5.28-5.16	2.011	51.08
	5.00	0.359-0.354	9.12-8.99	0.313-0.308	7.95-7.82	0.215-0.210	5.46-5.33	2.011	51.08
7/32	5.50	0.427-0.422	10.85-10.72	0.375-0.368	9.53-9.35	0.239-0.234	6.07-5.94	2.261	57.43
	6.00	0.494-0.489	12.55-12.42	0.438-0.431	11.13-10.95	0.257-0.252	6.53-6.40	2.511	63.78
1/4		0.494-0.489	12.55-12.42	0.438-0.431	11.13-10.95	0.270-0.265	6.86-6.73	2.511	63.78
9/32	7.00	0.563-0.558	14.30-14.17	0.500-0.492	12.79-12.50	0.302-0.297	7.67-7.54	2.761	70.13
5/16	8.00	0.635-0.630	16.13-16.00	0.563-0.554	14.30-14.07	0.333-0.328	8.46-8.33	3.011	76.48
	9.00	0.703-0.698	17.86-17.73	0.625-0.618	15.88-15.70	0.377-0.370	9.58-9.40	3.511	89.18
3/8		0.703-0.698	17.86-17.73	0.625-0.618	15.88-15.70	0.398-0.390	10.11-9.91	3.511	89.18
	10.00	0.703-0.698	17.86-17.73	0.625-0.618	15.88-15.70	0.418-0.413	10.62-10.49	3.511	89.18
7/16	11.00	0.781-0.776	19.84-19.71	0.688-0.680	17.48-17.27	0.476-0.468	12.09-11.89	4.011	101.88
	12.00	0.844-0.839	21.44-21.31	0.750-0.741	19.05-18.82	0.508-0.500	12.90-12.70	4.698	119.33
1/2		0.844-0.839	21.44-21.31	0.750-0.741	19.05-18.82	0.540-0.531	13.72-13.49	4.698	119.33
9/16	14.00	0.984-0.979	24.99-24.87	0.875-0.866	22.23-22.00	0.603-0.594	15.32-15.09	5.011	127.28
5/8	16.00	1.109-1.104	28.17-28.04	1.000-0.990	25.40-25.15	0.666-0.656	16.92-16.66	5.511	139.98
3/4	19.00	1.359-1.354	34.52-34.39	1.250-1.238	31.75-31.45	0.793-0.781	20.14-19.84	6.511	165.38
7/8	22.00	1.593-1.583	40.46-40.21	1.437-1.425	36.50-36.20	0.933-0.921	23.70-23.39	7.166	182.02
1	26.00	1.812-1.802	46.02-45.77	1.625-1.613	41.28-40.97	1.058-1.046	26.87-26.57	8.229	209.02

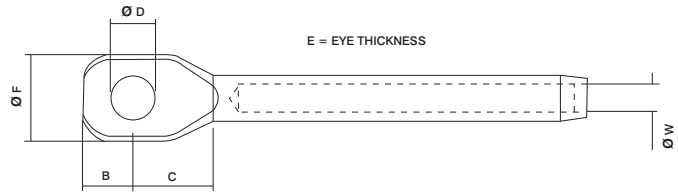


Navtec swage terminals meet all rigging needs

3. Wire Rigging

N546 Swage Eye

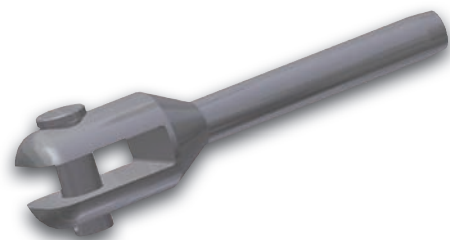
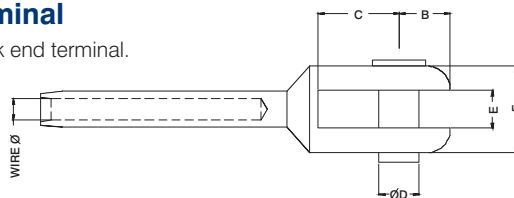
316 Stainless Steel traditional wire and eye terminal.



METRIC 1X19	WIRE DIA		B		C		D Dia		E		F Dia	
	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins
N546-M02508	2.5	3/32	7	0.276	11	0.433	6.5	0.256	5.5	0.217	13	0.512
N546-M0308	3	-	7	0.276	11	0.433	6.5	0.256	5.5	0.217	13	0.512
N546-0408	-	1/8	7	0.276	11	0.433	6.5	0.256	5.5	0.217	13	0.512
N546-M0410	4	5/32	8.2	0.323	16	0.630	8.1	0.319	6.7	0.264	16	0.630
N546-0612	-	3/16	10	0.394	18	0.709	9.7	0.382	8	0.315	19	0.748
N546-M0512	5	-	10	0.394	19.5	0.768	9.7	0.382	8	0.315	19	0.748
N546-0714	-	7/32	12.5	0.492	19.5	0.768	11.3	0.445	9.5	0.374	23	0.906
N546-M0614	6	-	12.5	0.492	19.5	0.768	11.3	0.445	9.5	0.374	23	0.906
N546-0812	-	1/4	12.5	0.492	19.5	0.768	9.7	0.382	9.5	0.374	23	0.906
N546-0814	-	1/4	12.5	0.492	19.5	0.768	11.3	0.445	9.5	0.374	23	0.906
N546-0816	-	1/4	15	0.591	22.5	0.886	13	0.512	9.5	0.374	26	1.024
N546-M0716	7	9/32	15	0.591	22	0.866	13	0.512	10.8	0.425	27	1.063
N546-M0816	8	5/16	16	0.630	23	0.906	13	0.512	12.5	0.492	27	1.063
N546-M0820	8	5/16	18	0.709	28	1.102	16.2	0.638	12.5	0.492	33	1.299
N546-1216	-	3/8	18	0.709	28	1.102	13	0.512	13.5	0.531	33	1.299
N546-1220	-	3/8	18	0.709	28	1.102	16.25	0.640	13.5	0.531	33	1.299
N546-M1020	10	-	18	0.709	28	1.102	16.25	0.640	13.5	0.531	33	1.299
N546-M1124	11	7/16	21	0.827	39	1.535	19.25	0.758	18	0.709	40	1.575
N546-M1224	12	-	21	0.827	39	1.535	19.25	0.758	18	0.709	40	1.575
N546-M1228	12	-	25	0.984	41	1.614	22.5	0.886	18	0.709	47.5	1.870
N546-1624	-	1/2	21	0.827	39	1.535	19.25	0.758	18	0.709	40	1.575
N546-1628	-	1/2	25	0.984	41	1.614	22.5	0.886	18	0.709	47.5	1.870
N546-M1428	14	9/16	25	0.984	41	1.614	22.5	0.886	21	0.827	47.5	1.870
N546-M1632	16	5/8	27.5	1.083	44.5	1.752	25.75	1.014	24	0.945	54	2.126
N546-M1936	19	3/4	30	1.181	50	1.969	29	1.142	25.7	1.012	57	2.244
N546-M2240	22	7/8	38	1.496	53.5	2.114	32	1.260	28.7	1.130	63	2.770
N546-M2640	26	1	42	1.654	61.5	2.421	32	1.260	31.3	1.232	71	2.795
N546-M2644	26	1	42	1.654	63	2.480	35.5	1.398	31.3	1.232	71	2.795
N546-M2848	28	1 1/8	45	1.772	75	2.953	38.25	1.506	34	1.339	90	3.543

N547 Swage Fork Terminal

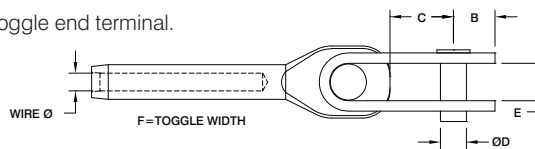
316 Stainless Steel traditional fork end terminal.



PART NUMBER	WIRE Ø		B		C		D		E		F	
	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins
N547-M02508	2.5	3/32	8.0	0.315	13.0	0.512	6.3	0.248	6.3	0.248	14.0	0.551
N547-M0308	3	-	8.0	0.315	13.0	0.512	6.3	0.248	6.3	0.248	14.0	0.551
N547-0408	-	1/8	8.0	0.315	13.0	0.512	6.3	0.248	6.3	0.248	14.0	0.551
N547-M0410	4	5/32	10.0	0.394	16.0	0.630	7.9	0.311	7.9	0.311	19.0	0.748
N547-0612	-	3/16	12.0	0.472	19.0	0.748	9.5	0.374	9.5	0.374	22.0	0.866
N547-M0512	5	-	12.0	0.472	19.0	0.748	9.5	0.374	9.5	0.374	22.0	0.866
N547-0714	-	7/32	14.0	0.551	22.0	0.866	11.1	0.437	11.1	0.437	28.5	1.122
N547-M0612	6	-	12.0	0.472	19.0	0.748	9.5	0.374	9.5	0.374	22.0	0.866
N547-0814	-	1/4	14.0	0.551	22.0	0.866	11.1	0.437	11.1	0.437	28.5	1.122
N547-M0716	7	9/32	16.0	0.630	25.5	1.004	12.7	0.500	12.7	0.500	31.5	1.240
N547-M0816	8	5/16	16.0	0.630	25.5	1.004	12.7	0.500	12.7	0.500	31.5	1.240
N547-M0820	8	5/16	20.0	0.787	32.0	1.260	15.8	0.622	15.8	0.622	37.8	1.488
N547-1220	-	3/8	20.0	0.787	32.0	1.260	15.8	0.622	15.8	0.622	37.8	1.488
N547-M1020	10	-	20.0	0.787	32.0	1.260	15.8	0.622	15.8	0.622	37.8	1.488
N547-M1124	11	7/16	24.0	0.945	38.0	1.496	19.0	0.748	19.0	0.748	47.3	1.862
N547-M1224	12	-	24.0	0.945	38.0	1.496	19.0	0.748	19.0	0.748	47.3	1.862
N547-1624	-	1/2	24.0	0.945	38.0	1.496	19.0	0.748	19.0	0.748	47.3	1.862
N547-M1428	14	9/16	28.0	1.102	44.5	1.752	22.2	0.874	22.2	0.874	54.0	2.126
N547-M1632	16	5/8	32.0	1.260	51.0	2.008	25.4	1.000	25.4	1.000	63.3	2.492
N547-M1936	19	3/4	36.0	1.417	57.0	2.244	28.5	1.122	28.5	1.122	69.6	2.740
N547-M2240	22	7/8	40.0	1.575	63.5	2.500	31.7	1.248	31.7	1.248	76.0	2.992
N547-M2644	26	1 1/8	44.0	1.732	70.0	2.756	35.0	1.378	35.0	1.378	82.5	3.248

N551 Swage Toggle Fork

316 Stainless Steel traditional toggle end terminal.



PART NUMBER	WIRE Ø		B		C		D		E		F	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
N551-0308	-	3/32	8.0	0.315	16	0.630	6.3	0.248	7.0	0.276	16.0	0.630
N551-M0308	3	-	8.0	0.315	16	0.630	6.3	0.248	7.0	0.276	16.0	0.630
N551-0408	-	1/8	8.0	0.315	16	0.630	6.3	0.248	7.0	0.276	16.0	0.630
N551-M0410	4	5/32	10.0	0.394	20	0.787	7.9	0.311	9.0	0.354	20.0	0.787
N551-0612	-	3/16	12.0	0.472	21	0.827	9.5	0.374	12.0	0.472	25.0	0.984
N551-M0512	5	-	12.0	0.472	21	0.827	9.5	0.374	12.0	0.472	25.0	0.984
N551-0714	-	7/32	16.0	0.630	25	0.984	11.1	0.437	14.0	0.551	30.0	1.181
N551-M0614	6	-	16.0	0.630	25	0.984	11.1	0.437	14.0	0.551	30.0	1.181
N551-0816	-	1/4	20.0	0.787	36	1.417	12.7	0.500	18.0	0.709	30.0	1.181
N551-M0716	7	9/32	20.0	0.787	36	1.417	12.7	0.500	18.0	0.709	30.0	1.181
N551-M0816	8	5/16	20.0	0.787	36	1.417	12.7	0.500	18.0	0.709	30.0	1.181
N551-M0820	8	5/16	20.0	0.787	44	1.732	15.8	0.622	19.0	0.748	40.0	1.575
N551-1220	-	3/8	20.0	0.787	44	1.732	15.8	0.622	19.0	0.748	40.0	1.575
N551-M1020	10	-	20.0	0.787	44	1.732	15.8	0.622	19.0	0.748	40.0	1.575
N551-1424	11	7/16	28.0	1.102	52	2.047	19.0	0.748	23.0	0.906	50.0	1.969
N551-M1224	12	-	28.0	1.102	52	2.047	19.0	0.748	23.0	0.906	50.0	1.969
N551-1624	-	1/2	28.0	1.102	52	2.047	19.0	0.748	23.0	0.906	50.0	1.969
N551-M1428	14	9/16	28.0	1.102	60	2.362	22.2	0.874	27.0	0.984	50.8	2.000
N551-M1632	16	5/8	37.0	1.457	66	2.598	25.4	1.000	27.0	1.063	63.5	2.500
N551-M1936	19	3/4	37.0	1.457	71	2.795	28.0	1.102	30.0	1.181	63.5	2.500
N551-M2240	22	7/8	40.0	1.575	77	3.031	31.8	1.252	34.5	1.358	76.2	3.000
N551-M2644	26	1	43.5	1.713	96	3.780	35.0	1.378	38	1.496	76.2	3.000

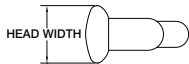
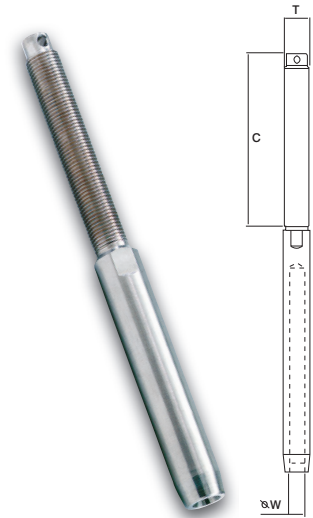
NOTE: Toggle assembly uses N546 Swage Eye.

3. Wire Rigging

N555 Swage Stud

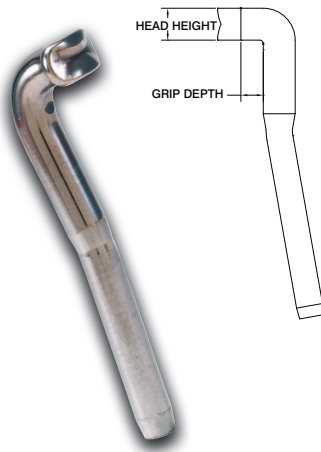
Made from high-quality 316 Stainless Steel with UNF Threads.

PART NUMBER	WIRE DIAMETER (W)		THREAD (T)	C	
	mm	in		mm	in
N555-M0308	3	-	1/4	55	2.17
N555-0408	-	1/8	1/4	55	2.17
N555-M0410	4	5/32	5/16	51	2.01
N555-0610	-	3/16	5/16	51	2.01
N555-0612	-	3/16	3/8	65	2.56
N555-M0510	5	-	5/16	51	2.01
N555-M0512	5	-	3/8	65	2.56
N555-0712	-	7/32	3/8	65	2.56
N555-0714	-	7/32	7/16	72	2.84
N555-M0612	6	-	3/8	65	2.56
N555-M0614	6	-	7/16	72	2.83
N555-M0616	6	-	1/2	80	3.15
N555-0812	-	1/4	3/8	65	2.56
N555-0814	-	1/4	7/16	72	2.84
N555-0816	-	1/4	1/2	80	3.15
N555-M0714	7	9/32	7/16	72	2.83
N555-M0716	7	9/32	1/2	80	3.15
N555-M0816	8	5/16	1/2	80	3.15
N555-M0820	8	5/16	5/8	95	3.74
N555-1220	-	3/8	5/8	95	3.74
N555-M1020	10	-	5/8	95	3.74
N555-M1124	11	7/16	3/4	110	4.33
N555-M1224	12	-	3/4	110	4.33
N555-1624	-	1/2	3/4	110	4.33
N555-1628	-	1/2	7/8	138	5.43
N555-M1428	14	9/16	7/8	138	5.43
N555-M1632	16	5/8	1	155	6.10
N555-M1936	19	3/4	1 1/8	176	6.93
N555-M2240	22	7/8	1 1/4	206	8.11
N555-M2644	26	1	1 3/8	219	8.62
N555-M2848	28	1 1/8	1 1/2	235	9.25



N741 Swage T

The traditional T Terminal, crafted from 316 Stainless Steel.

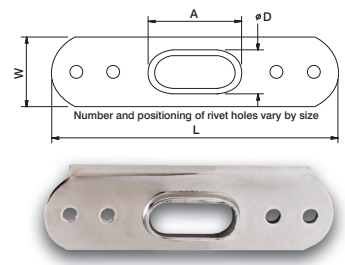


WIRE Ø		PART NUMBER			HEAD HEIGHT		HEAD WIDTH		GRIP DEPTH	
mm	in	Swage Part No.	Backing Plate	Retaining Plug	mm	in	mm	in	mm	in
2	-	N741-M02	N740-M03	N742-M03	6.3	0.25	14.5	0.57	6.0	0.24
2.5	3/32	N741-M025	N740-M03	N742-M03	6.3	0.25	15.5	0.61	6.0	0.24
3	-	N741-M03	N740-M03	N742-M03	6.3	0.25	16.6	0.65	6.0	0.24
-	1/8	N741-04	N740-03	N742-03	6.3	0.25	16.6	0.65	6.0	0.24
4	5/32	N741-M04	N740-M04	N742-M04	9.0	0.35	17.5	0.69	6.4	0.25
-	3/16	N741-06	N740-06	N742-06	11.1	0.44	20.0	0.79	8.0	0.31
5	-	N741-M05	N740-M05	N742-M05	11.1	0.44	20.0	0.79	8.0	0.31
-	7/32	N741-07	N740-07	N742-07	14.3	0.56	28.0	1.10	8.3	0.32
6	-	N741-M06	N740-M07	N742-M07	14.3	0.56	28.0	1.10	8.3	0.32
-	1/4	N741-08	N740-07	N742-07	14.3	0.56	28.0	1.10	8.3	0.32
7	9/32	N741-M07	N740-M07	N742-M07	14.3	0.56	28.0	1.10	8.3	0.32
8	5/16	N741-M08	N740-M10	N742-M10	17.8	0.70	32.0	1.26	12.0	0.47
-	3/8	N741-12	N740-10	N742-10	17.8	0.70	32.0	1.26	12.0	0.47
10	-	N741-M10	N740-M10	N742-M10	17.8	0.70	32.0	1.26	12.0	0.47

Grip depth is distance from bearing point to inside corner of 90 degree bend.
For backing plate info see below.

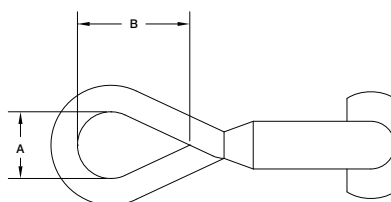
T-Terminal Backing Plates

WIRE Ø		METRIC PART NO.	A	Ø D	W	L	CONSTRUCTION	RIVET INFO
mm	in							
2, 2.5, 3	3/32, 1/8	N740-M03	.63"	0.4	.59"	1.97"	Stamped	2 X 3/16"
4	5/32	N740-M04	1.22"	.56"	1.04"	3.47"	Stamped	4 X 3/16"
5	3/16	N740-M05	1.09"	.62"	.98"	2.60"	Stamped	2 X 1/4"
6, 7	7/32, 1/4, 9/32	N740-M07	1.59"	.84"	1.55"	4.85"	Stamped	4 X 1/4"
8, 10	5/16, 3/8	N740-M10	1.98"	.99"	1.49"	5.95"	Cast	5 X 1/4"



N743 T Rings

T Rings enable fiber rope to connect to spars through a T Terminal backing plate. Ideal for replacing old wire runners and checkstays with lighter weight alternatives.

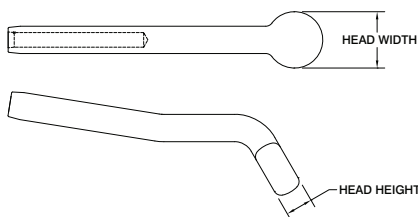


RING PART NUMBER.	BACKING PLATE	RETAINING PLUG	A		B	
			in	mm	in	mm
N743-M03	N740-M03	N742-M03	0.45	11.4	0.71	18.0
N743-M04	N740-M04	N742-M04	0.45	11.4	0.71	18.0
N743-M05	N740-M05	N742-M05	0.59	15.0	1.00	25.4
N743-M06	N740-M07	N742-M07	0.79	20.0	1.33	33.7

Backing plate determines T-ring size.
For T-head details see chart on page 56.

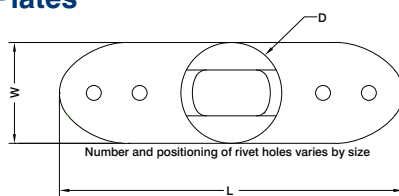
N841 Swage Shroud Terminal

The optimum design for a quick-release terminal, the 841 combines conventional Terminal advantages with strength and durability under heavy loads.



WIRE Ø		PART NUMBER			HEAD HEIGHT		HEAD WIDTH	
mm	in	Swage Part No.	Backing Plate	Retaining Plug	mm	in	mm	in
-	7/32	N841-07	N840-07	N842-07	10.8	0.425	23.2	0.913
6	-	N841-M06	N840-M06	N842-M06	12.5	0.492	22.5	0.886
-	1/4	N841-08	N840-07	N842-07	12.5	0.492	22.9	0.902
7	9/32	N841-M07	N840-M07	N842-M08	14.3	0.563	29.0	1.142
8	5/16	N841-M08	N840-M08	N842-M08	16.0	0.630	29.0	1.142
9	-	N841-M09	N840-M10	N842-M10	17.8	0.701	30.0	1.181
-	3/8	N841-12	N840-12	N842-12	17.8	0.701	32.5	1.280
10	-	N841-M10	N840-M10	N842-M10	17.8	0.701	32.5	1.280
11	7/16	N841-M11	N840-M12	N842-M12	21.4	0.843	39.0	1.535
12	-	N841-M12	N840-M12	N842-M12	21.4	0.843	39.0	1.535
-	1/2	N841-16	N840-14	N842-14	21.4	0.843	39.0	1.535

N840 Shroud Terminal Backing Plates

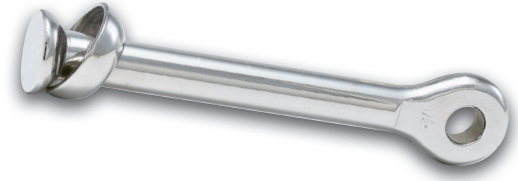


WIRE Ø		METRIC PART NO.	Ø D	W	L	CONSTRUCTION	RIVET INFO
mm	in						
6	7/32, 1/4	N840-M06	1.25"	1.18"	3.75"	Stamped	3 X 1/4"
7	9/32	N840-M07	1.5"	1.50"	4.75"	Stamped	3 X 1/4"
8	5/16	N840-M08	1.6"	1.55"	4.75"	Cast	3 X 1/4"
10	3/8	N840-M10	1.8"	1.75"	5.90"	Cast	4 X 1/4"
12	7/16, 1/2	N840-M12	2.0"	2.00"	7.85"	Cast	5 X 1/4"

3. Wire Rigging

N639 Stemball Eye

Made from high-quality 316 Stainless Steel. Used as a toggle in some headstay and backstay applications.



PART NUMBER	CUP Ø		PIN Ø	
	mm	in	mm	in
N639-3212	26.5	1.04	9.5	3/8
N639-3214	26.5	1.04	11	7/16
N639-3216	26.5	1.04	12.7	1/2
N639-4416	34	1.34	12.7	1/2
N639-4420	34	1.34	16	5/8

N641 Swage Stemball

For mast attachment. Can be used with Navtec K200 Tangs. See chart on page 30 for more details.



WIRE Ø		PART NUMBER		SHAFT Ø		HEAD Ø	
mm	in	PART NO.	CUP NO.	mm	in	mm	in
3	-	N641-M03	N640-M04	6.3	0.25	14.3	0.56
-	1/8	N641-04	N640-04	6.3	0.25	14.3	0.56
4	5/32	N641-M04	N640-M04	7.5	0.30	16.3	0.64
-	3/16	N641-06	N640-06	9.0	0.35	18.8	0.74
5	-	N641-M05	N640-M05	9.0	0.35	18.8	0.74
-	7/32	N641-07	N640-07	10.8	0.43	19.7	0.78
6	-	N641-M06	N640-M07	12.5	0.49	20.3	0.80
-	1/4	N641-08	N640-08	12.5	0.49	20.3	0.80
7	9/32	N641-M07	N640-M07	14.2	0.56	22.0	0.87
8	5/16	N641-M08	N640-M12	16.1	0.63	27.3	1.07
-	3/8	N641-12	N640-10	17.8	0.70	27.8	1.09
10	-	N641-M10	N640-M12	17.8	0.70	28.0	1.10

N640 Stemball Cup

Made from 316 Stainless Steel. Used with N641 Stemballs to increase head diameter.

PART NUMBER	OUTER Ø		HOLE Ø	
	mm	in	mm	in
N640-M03	21	0.83	11.00	0.43
N640-M04	26	1.02	9.00	0.35
N640-M05	26	1.02	11.00	0.43
N640-M06	26	1.02	13.25	0.52
N640-M07	26	1.02	16.30	0.64
N640-M12	34	1.34	20.00	0.79



Turnbuckles for Wire

Available in a wide range of designs, Navtec turnbuckles are compatible with most rig to deck interfaces. We use 316 Stainless Steel for maximum strength and durability under any marine conditions.

N671 Open Body Toggle Fork Turnbuckle

Open-body design. Chrome bronze body with 316 Stainless Steel fork and toggle. UNF threads.



PART NUMBER	THREAD U.N.F.	PIN Ø		FORK GAP		FORK DEPTH		LENGTH OPEN		LENGTH CLOSED		BREAKING STRENGTH	
		mm	in	mm	in	mm	in	mm	in	mm	in	kg	lbs
N671-080808	1/4	6.27	0.247	6.4	0.252	13.0	0.512	255	10.04	175	6.89	1500	3300
N671-101010	5/16	7.86	0.309	7.9	0.311	16.0	0.630	231	9.09	163	6.42	2270	5010
N671-121212	3/8	9.44	0.372	9.5	0.374	19.0	0.748	297	11.69	205	8.07	3730	8220
N671-141414	7/16	11.00	0.433	11.1	0.437	23.0	0.906	339	13.35	233	9.17	4990	11000
N671-161616	1/2	12.60	0.496	12.7	0.500	25.5	1.004	381	15.00	269	10.59	6670	14700
N671-202020	5/8	15.77	0.621	15.8	0.622	32.0	1.260	467	18.39	336	13.23	10700	23600
N671-242424	3/4	18.94	0.746	19.0	0.748	38.0	1.496	540	21.26	421	16.57	16600	36600
N671-282828	7/8	22.11	0.870	22.0	0.866	44.5	1.752	641	25.24	461	18.15	20600	45500
N671-323232	1	25.29	0.996	25.4	1.000	51.0	2.008	770	30.31	545	21.46	26900	59300
N671-363636	1 1/8	28.45	1.120	28.5	1.122	57.0	2.244	862	33.94	635	25.00	33600	74100
N671-404040	1 1/4	31.63	1.245	31.7	1.248	63.5	2.500	980	38.58	712	28.03	38100	84000
N671-444444	1 3/8	34.80	1.370	35.0	1.378	70.0	2.756	1096	43.15	794	31.26	45400	100000

For toggle dimensions see N673 chart on page 60.
For N547 Fork dimensions see page 55.

N672 Open Body Double Toggle Turnbuckle

Open-body design. Chrome bronze body with 316 Stainless Steel toggles. UNF threads.



PART NUMBER	THREAD U.N.F.	PIN Ø		LENGTH OPEN		LENGTH CLOSED		BREAKING STRENGTH	
		mm	in	mm	in	mm	in	kg	lbs
N672-080808	1/4	6.27	0.247	260	10.24	180	7.09	1500	3300
N672-101010	5/16	7.86	0.309	249	9.80	181	7.13	2270	5010
N672-121212	3/8	9.44	0.372	320	12.60	228	8.98	3730	8220
N672-141414	7/16	11.00	0.433	368	14.49	262	10.32	4990	11000
N672-161616	1/2	12.60	0.496	438	17.24	326	12.83	6670	14700
N672-202020	5/8	15.77	0.621	520	20.47	389	15.31	10700	23600
N672-242424	3/4	18.94	0.746	613	24.12	471	18.53	16600	36600
N672-282828	7/8	22.11	0.870	718	28.25	538	21.17	20600	45500
N672-323232	1	25.29	0.996	827	32.54	602	23.69	26900	59300
N672-363636	1 1/8	28.45	1.120	916	36.07	689	27.14	33600	74100
N672-404040	1 1/4	31.63	1.245	1062	41.81	794	31.26	38100	84000
N672-444444	1 3/8	34.80	1.370	1178	46.38	876	34.49	45400	100000

For toggle dimensions see N673 chart on page 60.

3. Wire Rigging

N673 Open Body Toggle Swage Turnbuckle

Open-body swage and toggle. Chrome bronze body. 316 Stainless Steel swage studs and toggles. UNF threads.



PART NUMBER	WIRE Ø		THREAD U.N.F.	PIN Ø		TOGGLE GAP		TOGGLE DEPTH		LENGTH OPEN*		LENGTH CLOSED*		BREAKING STRENGTH	
	mm	in		mm	in	mm	in	mm	in	mm	in	mm	in	kg	lbs
N673-M030808	3	-	1/4	6.27	0.247	8.0	0.315	16.0	0.630	235	9.25	155	6.10	1500	3310
N673-040808	-	1/8	1/4	6.27	0.247	8.0	0.315	16.0	0.630	235	9.25	155	6.10	1500	3310
N673-M041010	4	5/32	5/16	7.86	0.309	9.0	0.354	20.0	0.787	221	8.70	153	6.02	2270	5010
N673-061212	-	3/16	3/8	9.44	0.372	12.0	0.472	23.0	0.906	285	11.22	193	7.60	3730	8220
N673-M051010	5	-	5/16	7.86	0.309	9.0	0.354	20.0	0.787	221	8.70	153	6.02	2270	5010
N673-M051212	5	-	3/8	9.44	0.372	12.0	0.472	23.0	0.906	285	11.22	193	7.60	3730	8220
N673-071212	-	7/32	3/8	9.44	0.372	12.0	0.472	23.0	0.906	285	11.22	193	7.60	3730	8220
N673-071414	-	7/32	7/16	11.00	0.433	14.0	0.551	26.0	1.024	321	12.64	215	8.46	4940	10900
N673-M061212	6	-	3/8	9.44	0.372	12.0	0.472	23.0	0.906	285	11.22	193	7.60	3730	8220
N673-M061414	6	-	7/16	11.00	0.433	14.0	0.551	26.0	1.024	321	12.64	215	8.46	4940	10900
N673-081414	-	1/4	7/16	11.00	0.433	14.0	0.551	26.0	1.024	321	12.64	215	8.46	4990	11000
N673-081616	-	1/4	1/2	12.60	0.496	18.0	0.709	36.0	1.417	364	14.33	252	9.92	6670	14700
N673-M071414	7	9/32	7/16	11.00	0.433	14.0	0.551	26.0	1.024	321	12.64	215	8.46	4990	11000
N673-M071616	7	9/32	1/2	12.60	0.496	18.0	0.709	36.0	1.417	364	14.33	252	9.92	6670	14700
N673-M081616	8	5/16	1/2	12.60	0.496	18.0	0.709	36.0	1.417	364	14.33	252	9.92	6670	14700
N673-M082020	8	5/16	5/8	15.77	0.621	19.0	0.748	44.0	1.732	449	17.68	318	12.52	10700	23600
N673-122020	-	3/8	5/8	15.77	0.621	19.0	0.748	44.0	1.732	449	17.68	318	12.52	10700	23600
N673-M102020	10	-	5/8	15.77	0.621	19.0	0.748	44.0	1.732	449	17.68	318	12.52	10700	23600
N673-142424	-	7/16	3/4	18.94	0.746	23.0	0.906	52.0	2.047	519	20.43	377	14.84	16600	36600
N673-M122424	12	-	3/4	18.94	0.746	23.0	0.906	52.0	2.047	519	20.43	377	14.84	16600	36600
N673-162424	-	1/2	3/4	18.94	0.746	23.0	0.906	52.0	2.047	519	20.43	377	14.84	16600	36600
N673-M142828	14	9/16	7/8	22.11	0.870	27.0	1.063	57.0	2.244	619	24.37	439	17.28	20600	45500
N673-M163232	16	5/8	1	25.29	0.996	30.0	1.181	61.0	2.402	706	27.80	481	18.94	26900	59300
N673-M193636	19	3/4	1 1/8	28.45	1.120	34.0	1.339	69.0	2.717	800	31.50	573	22.56	33600	74100
N673-M224040	22	7/8	1 1/4	31.63	1.245	36.0	1.417	77.0	3.031	917	36.10	649	25.55	38100	84000
N673-M264444	26	1	1 3/8	34.80	1.370	36.0	1.417	100.0	3.937	1050	41.34	748	29.45	45400	100000

*Length is measured from pin to bottom of swage hole (end of wire).

N674 Blank Toggle

Open-body blank and toggle with chrome bronze body. 316 Stainless Steel toggles. UNF threads.



PART NUMBER	THREAD	PIN Ø		STROKE		BREAKING STRENGTH	
	UNF	mm	in	mm	in	kg	lbs
N674-000808	1/4	6.27	0.247	80	3.15	1500	3300
N674-001010	5/16	7.86	0.309	68	2.68	2270	5010
N674-001212	3/8	9.44	0.372	92	3.62	3730	8220
N674-001414	7/16	11.00	0.433	106	4.17	4990	11000
N674-001616	1/2	12.60	0.496	112	4.41	6670	14700
N674-002020	5/8	15.77	0.621	131	5.16	10700	23600
N674-002424	3/4	18.94	0.746	142	5.59	16600	36600
N674-002828	7/8	22.11	0.870	180	7.09	20600	45500
N674-003232	1	25.29	0.996	225	8.86	26900	59300
N674-003636	1 1/8	28.45	1.120	227	8.94	33600	74100
N674-004040	1 1/4	31.63	1.245	268	10.55	38100	84000
N674-004444	1 3/8	34.80	1.370	302	11.89	45400	100000

For toggle dimensions see N673 chart above.

N676 Open Body Fork Blank Turnbuckle

Open-body design. Chrome bronze body, 316 Stainless Steel fork end. UNF thread sizes.



PART NUMBER	THREAD	PIN Ø		STROKE		BREAKING STRENGTH	
	U.N.F.	mm	in	mm	in	kg	lbs
N676-000808	1/4	6.27	0.247	80	3.15	1500	3300
N676-001010	5/16	7.86	0.309	68	2.68	2270	5010
N676-001212	3/8	9.44	0.372	92	3.62	3730	8220
N676-001414	7/16	11.00	0.433	106	4.17	4990	11000
N676-001616	1/2	12.60	0.496	112	4.41	6670	14700
N676-002020	5/8	15.77	0.621	131	5.16	10700	23600
N676-002424	3/4	18.94	0.746	142	5.59	16600	36600
N676-002828	7/8	22.11	0.870	180	7.09	20600	45500
N676-003232	1	25.29	0.996	225	8.86	26900	59300
N676-003636	1 1/8	28.45	1.120	227	8.94	33600	74100
N676-004040	1 1/4	31.63	1.245	268	10.55	38100	84000
N676-004444	1 3/8	34.80	1.370	302	11.89	45400	100000

For fork dimensions see N671 chart on page 59.

N679 Open Body Marine Eye Blank Turnbuckle

Open-body design. Chrome bronze body, 316 Stainless Steel marine eye. UNF thread sizes.

PART NUMBER	THREAD	PIN		EYE WIDTH		STROKE		BREAKING STRENGTH	
	U.N.F.	mm	in	mm	in	mm	in	kg	lbs
N679-000808	1/4	6.27	0.247	13.0	0.512	80	3.15	1500	3300
N679-001010	5/16	7.86	0.309	16.0	0.630	68	2.68	2270	5010
N679-001212	3/8	9.44	0.372	19.0	0.748	92	3.62	3730	8220
N679-001414	7/16	11.00	0.433	23.0	0.906	106	4.17	4990	11000
N679-001616	1/2	12.60	0.496	27.0	1.063	112	4.41	6670	14700
N679-002020	5/8	15.77	0.621	33.0	1.299	131	5.16	10700	23600
N679-002424	3/4	18.94	0.746	39.0	1.535	142	5.59	16600	36600
N679-002828	7/8	22.11	0.870	47.5	1.870	180	7.09	20600	45500
N679-003232	1	25.29	0.996	54.0	2.126	225	8.86	26900	59300
N679-003636	1 1/8	28.45	1.120	57.0	2.244	227	8.94	33600	74100

N677 Open Body Blank Stemball Blank Turnbuckle

Open-body design. Chrome bronze body, Stainless Steel ends. Various thread sizes. UNF threads.



PART NUMBER	THREAD	HEAD Ø		STROKE		BREAKING STRENGTH	
	UNF	mm	in	mm	in	kg	lbs
N677-000808	1/4	14.64	0.576	80	3.15	1500	3300
N677-001010	5/16	18.00	0.709	68	2.68	2270	5010
N677-001212	3/8	17.60	0.693	92	3.62	3730	8220
N677-001414	7/16	22.00	0.866	106	4.17	4990	11000
N677-001616	1/2	26.00	1.024	112	4.41	6670	14700
N677-002020	5/8	28.00	1.102	131	5.16	10700	23600
N677-002424	3/4	40.68	1.602	142	5.59	16600	36600
N677-002828	7/8	43.63	1.718	180	7.09	20600	45500

3. Wire Rigging

N534 Closed Body Turnbuckle

Closed-body design. Full Stainless Steel body with 316 Stainless Steel toggle end. UNF threads.

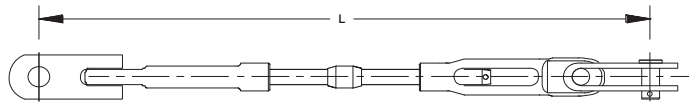


PART NUMBER	THREAD UNF	PIN Ø		STROKE		BREAKING STRENGTH	
		mm	in	mm	in	kg	lbs
N534-000808	1/4	6.27	0.247	52	2.05	1020	2240
N534-001010	5/16	7.86	0.309	57	2.24	2030	4470
N534-001212	3/8	9.44	0.372	78	3.07	3090	6800
N534-001616	1/2	12.60	0.496	100	3.94	6680	14700
N534-002020	5/8	15.77	0.621	121	4.76	10200	22400

For toggle dimensions see N673 chart on page 60.

C600 Double Toggle Turnbuckle

Reliable and flexible. Features toggles at both ends. Most often used with Norseman-type eyes.



PART NUMBER	PIN Ø		LENGTH OPEN		LENGTH CLOSED		BREAKING STRENGTH		WEIGHT	
	mm	in	mm	in	mm	in	kgs	lbs	kgs	lbs
C600-001010	7.9	5/16	344	13.55	261	10.28	2,490	5,500	0.270	0.60
C600-001012	9.5	3/8	344	13.55	261	10.28	2,490	5,500	0.297	0.65
C600-001212	9.5	3/8	386	15.20	297	11.70	3,760	8,300	0.418	0.92
C600-001214	11.1	7/16	386	15.20	297	11.70	3,760	8,300	0.435	0.96
C600-001414	11.1	7/16	422	16.60	329	12.97	5,080	11,200	0.682	1.50
C600-001416	12.7	1/2	422	16.60	329	12.97	5,080	11,200	0.714	1.57
C600-001616	12.7	1/2	481	18.95	381	15.01	6,890	15,200	0.982	2.16
C600-001620	15.9	5/8	481	18.95	381	15.01	6,890	15,200	1.41	3.10
C600-002020	15.9	5/8	560	22.03	442	17.39	10,900	24,000	1.84	4.05
C600-002424	19.1	3/4	662	26.08	523	20.58	14,200	31,300	3.29	7.24
C600-002828	22.2	7/8	760	29.92	593	23.36	19,500	43,000	4.99	11.0
C600-003232	25.4	1	798	31.42	633	24.92	25,400	56,000	6.94	15.3
C600-004040	31.8	1 1/4	966	38.04	765	30.13	40,800	90,000	14.09	31.0

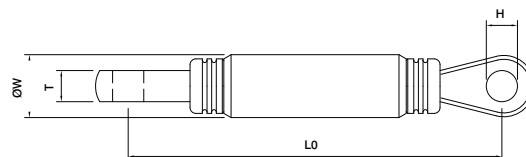
For toggle dimensions refer to H200 High Fatigue Jaw chart on page 28, and compare using pin diameter.

Wire Rigging Insulators

Ni Norseman Wire Rigging Insulators

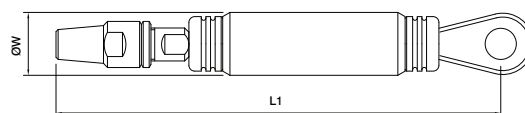
For superior strength and electrical performance in a wire rigging/backstay system. Several end configurations are offered to make an adaptable connection. Withstands high sustained loads in all conditions.

Ni50 Eye Eye



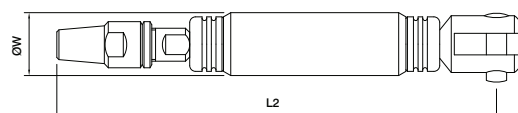
ITEM NUMBER Eye - Eye	WIRE SIZE		LENGTH (L)		HOLE		T		WIDTH	
	mm	in	mm	in	mm	in	mm	in	mm	in
Ni50-1212	5	3/16	152	5.984	10	0.380	8	0.310	29	1.140
Ni50-1414	6	7/32	165	6.496	11	0.440	10	0.370	29	1.140
Ni50-1616	7	9/32	185	7.283	13	0.510	11	0.430	35	1.370
Ni50-2020-M08	8	5/16	191	7.520	16	0.630	13	0.490	35	1.370
Ni50-2020-M10	10	3/8	365	14.370	16	0.630	17	0.650	44	1.730
Ni50-2424	12	1/2	277	10.906	19	0.760	18	0.710	44	1.730
Ni50-2828	14	9/16	381	15.000	23	0.890	21	0.830	63	2.500
Ni50-3232	16	5/8	406	15.984	26	1.010	24	0.940	63	2.500

Ni51 Swageless Eye



ITEM NUMBER Swageless - Eye	WIRE SIZE		LENGTH (L)		HOLE		T		WIDTH	
	mm	in	mm	in	mm	in	mm	in	mm	in
Ni51-0612-1		3/16	178	7.010	10	0.380	8	0.310	29	1.140
Ni51-M0512-1	5		178	7.010	10	0.380	8	0.310	29	1.140
Ni51-0714-1		7/32	178	7.010	11	0.440	10	0.370	29	1.140
Ni51-M0614-1	6		198	7.800	11	0.440	10	0.370	29	1.140
Ni51-0814-1		1/4	198	7.800	11	0.440	10	0.370	29	1.140
Ni51-M0716-1	7	9/32	216	8.500	13	0.510	11	0.430	35	1.370
Ni51-M0820-1	8	5/16	229	9.020	16	0.630	13	0.490	35	1.370
Ni51-1220-1		3/8	308	12.130	16	0.630	17	0.650	44	1.730
Ni51-M1020-1	10		308	12.130	16	0.630	17	0.650	44	1.730
Ni51-M1124-1	11	7/16	341	13.430	19	0.760	18	0.710	44	1.730
Ni51-M1224-1	12		341	13.430	19	0.760	18	0.710	44	1.730
Ni51-1624-1		1/2	341	13.430	19	0.760	18	0.710	44	1.730
Ni54-M1428-1	14	9/16	473	18.620	23	0.890	21	0.830	63	2.500
Ni54-M1632-1	16	5/8	479	18.860	26	1.010	24	0.940	63	2.500
Ni54-M1936-1	19	3/4	549	21.610	29	1.140	26	1.010	63	2.500

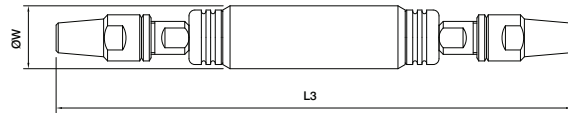
Ni52 Swageless Fork



ITEM NUMBER Swageless - Fork	WIRE SIZE		LENGTH (L)		PIN/GAP		WIDTH	
	mm	in	mm	in	mm	in	mm	in
Ni52-M0512-1	5		190	7.480	9.5	3/8	29	1.140
Ni52-M0614-1	6		203	7.990	11	7/16	29	1.140
Ni52-M0716-1	7	9/32	222	8.750	13	1/2	35	1.370
Ni52-M0816-1	8	5/16	254	10.000	13	1/2	35	1.370
Ni52-1220-1		3/8	346	13.630	16	5/8	44	1.730
Ni52-M1020-1	10		346	13.630	16	5/8	44	1.730
Ni52-M1224-1	12		362	14.250	19	3/4	44	1.730

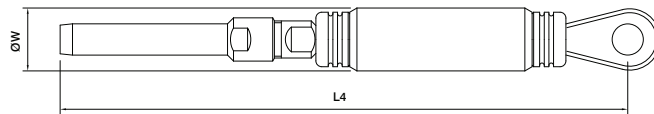
3. Wire Rigging

Ni53 Swageless Swageless



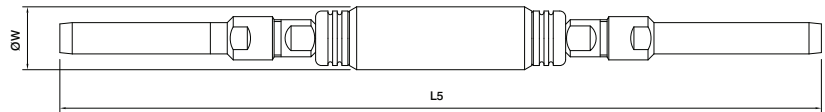
ITEM NUMBER	WIRE SIZE		LENGTH (L)		WIDTH	
	mm	in	mm	in	mm	in
Swageless - Swageless						
Ni53-0606-1		3/16	211	8.310	29	1.140
Ni53-M05M05-1	5		211	8.310	29	1.140
Ni53-0707-1		7/32	211	8.310	29	1.140
Ni53-M06M06-1	6		229	9.020	29	1.140
Ni53-0808-1		1/4	229	9.020	29	1.140
Ni53-M07M07-1	7	9/32	241	9.490	35	1.370
Ni53-M08M08-1	8	5/16	262	10.320	35	1.370
Ni53-1212-1		3/8	308	12.130	44	1.730
Ni53-M10M10-1	10		308	12.130	44	1.730
Ni53-M11M11-1	11	7/16	401	15.790	44	1.730
Ni53-M12M12-1	12		401	15.790	44	1.730
Ni53-1616-1		1/2	401	15.790	44	1.730
Ni53-M14M14-1	14	9/16	514	20.240	63	2.500
Ni53-M16M16-1	16	5/8	552	21.730	63	2.500
Ni53-M19M19-1	19	3/4	610	24.020	63	2.500

Ni54 Swage Eye



ITEM NUMBER	WIRE SIZE		LENGTH (L)		HOLE		T		WIDTH	
	mm	in	mm	in	mm	in	mm	in	mm	in
Swage - Eye										
Ni54-0612		3/16	220	8.660	10	0.380	8	0.310	29	1.140
Ni54-M0512	5		220	8.660	10	0.380	8	0.310	29	1.140
Ni54-0714		7/32	220	8.660	11	0.440	10	0.370	29	1.140
Ni54-M0614	6		238	9.370	11	0.440	10	0.370	29	1.140
Ni54-0814		1/4	238	9.370	11	0.440	10	0.370	29	1.140
Ni54-M0716	7	9/32	271	10.670	13	0.510	11	0.430	35	1.370
Ni54-M0820	8	5/16	283	11.140	16	0.630	17	0.650	35	1.370
Ni54-1220		3/8	402	15.830	16	0.630	17	0.650	44	1.730
Ni54-M1020	10		402	15.830	16	0.630	17	0.650	44	1.730
Ni54-M1224	12		465	18.310	19	0.760	18	0.710	44	1.730
Ni54-1624		1/2	465	18.310	19	0.760	18	0.710	44	1.730
Ni54-M1428	14	9/16	607	23.900	23	0.890	21	0.830	63	2.500
Ni54-M1936	19	3/4	753	29.650	29	1.140	26	1.010	63	2.500

Ni55 Swage Swage



ITEM NUMBER	WIRE SIZE		LENGTH (L)		WIDTH	
	mm	in	mm	in	mm	in
Swage - Swage						
Ni55-0606		3/16	290	11.420	29	1.140
Ni55-M05M05	5		290	11.420	29	1.140
Ni55-M06M06	6		315	12.400	29	1.140
Ni55-0808		1/4	315	12.400	29	1.140
Ni55-M07M07	7	9/32	360	14.170	35	1.370
Ni55-M08M08	8	5/16	376	14.800	35	1.370
Ni55-1212		3/8	510	20.080	44	1.730
Ni55-M10M10	10		510	20.080	44	1.730
Ni55-M11M11	11	7/16	598	23.540	44	1.730
Ni55-M12M12	12		640	25.200	44	1.730
Ni55-1616		1/2	640	25.200	44	1.730
Ni55-M14M14	14		820	32.280	63	2.500
Ni55-M16M16	16		844	33.230	63	2.500

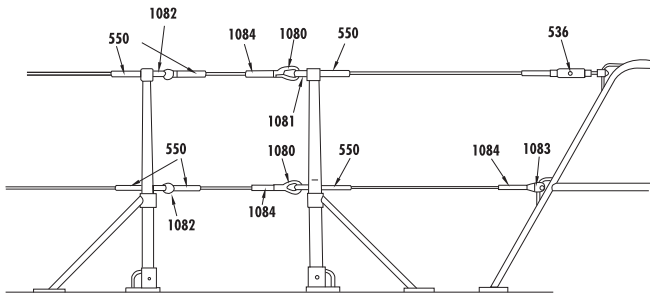


Navtec - The premium choice for continuous wire rigging

3. Wire Rigging

Lifeline, Guardrail & Safety Fittings

Our lifeline fittings are designed to be used with 1/8" to 1/4" / 3mm to 6mm wire. The range has been proven over many years of use and is selected by boat builders who recognize that lifeline safety is not an area where quality can be compromised.



- N536 - Lifeline Turnbuckle
- NLL-550 - Short Swage Stud
- NLL-1080 - Pelican Hook
- NLL-1081 - Threaded Lifeline Eye
- NLL-1082 - Interlinked Eyes
- NLL-1083 - Adjustable Fork End
- NLL-1084 - Long Swage Stud with Locknut

PART NUMBER	WIRE	THREAD	PIN	
N030-	See page 51 for details			
NLL-550-	M0410	4mm	5/16 UNF	n/a
	M04M08	4mm	M8	n/a
	M0510	5mm	5/16 UNF	n/a
	M05M08	5mm	M8	n/a
NLL-1084-	M0410	4mm	5/16 UNF	n/a
	M04M08	4mm	M8	n/a
	M0510	5mm	5/16 UNF	n/a
	M05M08	5mm	M8	n/a
	M0610	6mm	5/16 UNF	n/a
	M06M08	6mm	M8	n/a
NLL-1081-	10	n/a	5/16 UNF	n/a
	M08	n/a	M8	n/a
NLL-1082-	10	n/a	5/16 UNF	n/a
	M08	n/a	M8	n/a
N536-	M041010	4mm	5/16 UNF	5/16
	M051010	5mm	5/16 UNF	5/16
	M051212	5mm	3/8 UNF	3/8
	M061212	6mm	3/8 UNF	3/8
	M071616	7mm	1/2 UNF	1/2
	M081616	8mm	1/2 UNF	1/2
NLL-1080-	10R	n/a	5/16 UNF	n/a
	M08	n/a	M8	n/a

N536 Lifeline Turnbuckles

See N534 Closed Body Turnbuckle on page 62 for details.



NLL-812 Pelican Hook

316 Stainless Steel made to be used with thimble and Nico or Talurit press.



NLL-1082 Interlinked Eyes

316 Stainless Steel made with 5/16" (NLL-1082-10) or 8mm (NLL-1082-M08) threads.



NLL-550 Short Swage Stud

316 Stainless Steel made to be used with lifeline eyes. Wire from 1/8" to 1/4" / 3mm to 6mm. Thread 8mm and 5/16".



NLL-1080 Pelican Hook

316 Stainless Steel made with 5/16" (NLL-1080-10R) or 8mm (NLL-1080-MO8R) threads.



NLL-1081 Single Eye

316 Stainless Steel made with 5/16" (NLL-1081-10) or 8mm (NLL-1081-M08) threads.



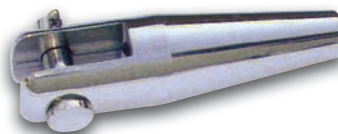
NLL-1084 Long Swage Stud with Locknut

316 Stainless Steel made to be used with Closed-Body Turnbuckle, Pelican Hooks and Adjustable Fork Ends. Wire from 1/8" to 1/4" / 3mm to 6mm. Thread 8mm and 5/16".



NLL-1083 Adjustable Fork End

316 Stainless Steel made with 5/16" (NLL-1083-1008) or 8mm (NLL-1083-MO808) threads.



N030 Norseman Swageless Stud

See page 51 for details.





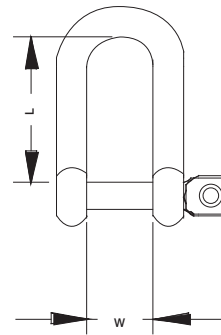
4. Navtec Hardware

Navtec Hardware provides proven, essential rigging accessories, ensuring that Navtec is the complete rigging solution.

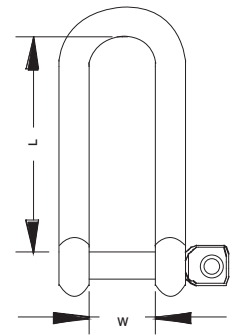
4. Navtec Hardware

NHS Forged Shackles

Made from 316 Stainless as standard, 17-4 as special order Screw pin as standard, shake proof or socket head pins as special order.



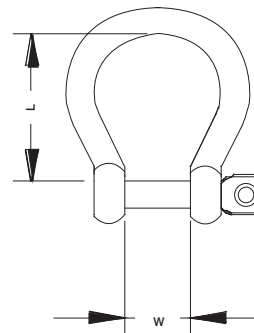
"D" Shackle



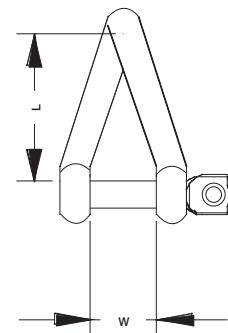
Long "D" Shackle

PIN HOLE DIAMETER		W		"D" SHACKLE			LONG "D" SHACKLE			BREAKING LOAD D&L SHACKLE	
mm	in	mm	in	PART NUMBER	mm	L in	PART NUMBER	mm	L in	kg	lb
4	5/32	8	0.31	NSH-05D	16	0.63				800	1760
5	3/16	10	0.39	NSH-06D	20	0.79	NSH-06L	29	1.14	1500	3300
6	1/4	13	0.51	NSH-08D	25	0.98	NSH-08L	43	1.69	1950	4300
8	5/16	16	0.63	NSH-10D	32	1.26	NSH-10L	49	1.93	3000	6600
9.5	3/8	19	0.75	NSH-12D	38	1.50	NSH-12L	55	2.16	4800	10560
11	7/16	22	0.87	NSH-14D	44	1.73				6000	13200
12.7	1/2	26	1.02	NSH-16D	52	2.05				7500	16500
16	5/8	29	1.14	NSH-20D	58	2.28				10000	22000
19	3/4	32	1.26	NSH-24D	64	2.52				14000	30800
22	7/8	38	1.50	NSH-28D	76	2.99				18000	39600

Bow & Twist Shackles



Bow Shackle



Twist Shackle

PIN HOLE DIAMETER		W		BOW SHACKLE			TWIST SHACKLE			BREAKING LOAD B&T SHACKLE	
mm	in	mm	in	PART NUMBER	mm	L IN	PART NUMBER	mm	L IN	kg	lb
4	5/32	8	0.31	NSH-05B	18	0.71		13	0.51	600	1326
5	3/16	10	0.39	NSH-06B	22	0.87	NSH-06T	16	0.63	1200	2640
6	1/4	13	0.51	NSH-08B	28	1.10	NSH-08T	20	0.79	1600	3440
8	5/16	16	0.63	NSH-10B	35	1.38	NSH-10T	26	1.02	2400	5280
9.5	3/8	19	0.75	NSH-12B	38	1.50	NSH-12T	31	1.22	3800	8450
11	7/16	22	0.87	NSH-14B	46	1.81	NSH-14T	35	1.38	4800	10560
12.7	1/2	26	1.02	NSH-16B	52	2.05	NSH-16T	41	1.61	6000	13200
16	5/8	29	1.14	NSH-20B	60	2.36	NSH-20T	45	1.77	8000	17600
19	3/4	32	1.26	NSH-24B	68	2.68	NSH-24T	51	2.00	11000	24640

NSS Supersnap Shackles

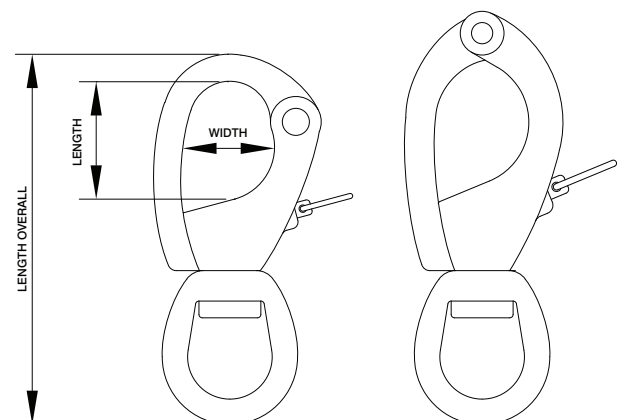
The Navtec Supersnap series owes its popularity to a few key characteristics. They are strong, crafted from heat-treated Stainless Steel, electropolished, and fitted with swivel eyes. Can be opened under load with Racing Fid or with the no-snap side trigger opening mechanism for faster, easier deck work. These traits have earned them a place on the world's finest competition yachts.



PART NUMBER	THROAT WIDTH		THROAT LENGTH		WEIGHT		EYE SIZE	RECOMMENDED WORKING LOAD	
	mm	in	mm	in	grams	oz		kg	lbs
NSS-719	13.6	0.54	16.1	0.63	53	1.9	Large	1350	3000
NSS-720	21.5	0.85	26.2	1.03	155	5.5	Standard	2050	4550
NSS-723	21.5	0.85	25.8	1.01	164	5.8	Large	2050	4550
NSS-721	26.7	1.05	29.8	1.17	290	10.2	Standard	3600	8000
NSS-724	26.5	1.04	29.8	1.17	300	10.6	Large	3050	6750
NSS-726	26	1.02	29.8	1.17	386	13.6	Large	5650	12500

NSS Snap Shackles

17-4 high-strength Stainless Steel



Side Opening

Top Opening

Side Opening

PART NUMBER	SIZE	THROAT WIDTH		THROAT LENGTH		LENGTH OVERALL		WEIGHT		BREAKING LOAD	
		mm	in	mm	in	mm	in	kg	lb	kg	lb
NSS-2571	1	17	0.687	22	0.875	68	2.687	0.060	0.125	2270	5000
NSS-2572	2	22	0.875	28	1.125	89	3.500	0.132	0.297	4126	9100
NSS-2573	3	26	1.000	34	1.375	109	4.250	0.255	0.563	6122	13500

Top Opening

NSS-2511	1	18	0.687	24	0.937	70	2.750	0.070	0.156	2270	5000
NSS-2512	2	22	0.875	29	1.125	98	3.875	0.142	0.313	4126	9100
NSS-2513	2	26	1.000	34	1.375	118	4.625	0.270	0.594	6122	13500

Top Opening With Large Swivel Eye

NSS-2522	2	22	0.875	29	1.123	107	4.250	0.150	0.328	4126	9100
NSS-2523	3	26	1.000	34	1.375	129	5.062	0.280	0.625	6122	13500

NSS-730 Racing Fid

For use with Supersnap Shackles
 NSS-730-BLUE
 NSS-730-CLEAR



4. Navtec Hardware

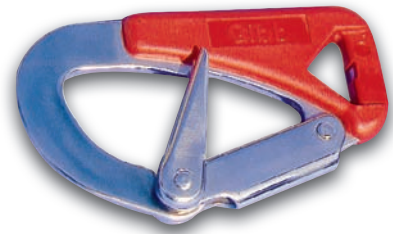
NSS- 1079 Safety Hook

The Norseman Gibb Safety Hook established as the marine industry standard for safety, offers single handed operation and a double action locking system.



NSS - 1077 Safety Hook

A lighter version used by XM Yachting for harnesses.



NTH Thimbles

Made of 316 Stainless Steel.
Available in sizes from 2mm (5/16") to 26mm (1")



V100 Rig Rap

A self-bonding waterproof tape used in preventing turnbuckles, cotter pins, spreaders and chain plates from chafing lines and sails. A great addition to any toolbox on a boat. Best value per foot of any chafe tape on the market.



Spartite: Spartite Kit 1 (836cc) Spartite Gallon (US Gallon)

Spartite is the modern answer to the problem of mast support and sealing at the partners. Spartite is a pre-measured two-part polymer poured into the cavity between the mast and the partners while the mast is in the boat.

NOT AVAILABLE FROM NAVTEC US.





5. Hydraulics

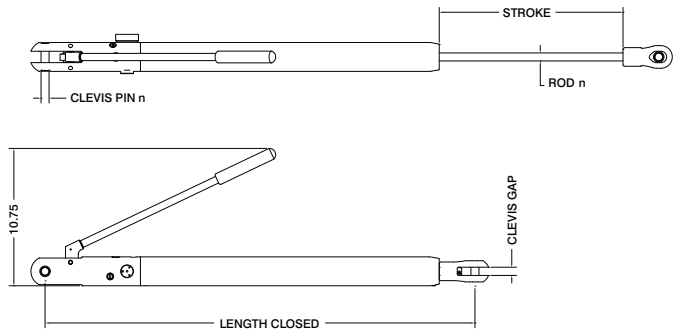
Navtec hydraulic systems offer precise control and a significant sailing advantage for racers and cruisers. Whether your boat is a Grand Prix race yacht or a 200 foot superyacht, Navtec hydraulic systems can be customised to meet your exact requirements.



Navtec Hydraulics - America's Cup winning performance

A370 Hydraulic Integral Backstay Adjuster

Ergonomics meets economics. The new Navtec Series 9 Integral incorporates several key design features while keeping to the high marine standard that Navtec is known for. The Series 9 design moves the hydraulic feed tube inside to give the unit a sleek look. The pump piston size has been increased to 1/2" to increase flow, which produces the faster action needed for today's modern mast. The Integral is designed to be used with the Integral Toggle. Available with a black or a clear finish.



PART NUMBER	MAX PULL FORCE @ RELIEF		LENGTH CLOSED		LENGTH OPEN		WEIGHT		MAX WIRE SIZE	
	lbs	kg	in	mm	in	mm	lbs	kg	in	mm
A370-BLE-006	3,500	1,590	31.1	790	44.6	1133	7.0	3.18	7/32	5.6
A370-BLE-010	5,400	2,450	31.1	791	44.6	1134	7.3	3.31	9/32	7.1
A370-BLE-012	6,500	2,950	33.5	850	47.8	1213	12.2	5.53	5/16	7.9
A370-BLE-017	8,700	3,950	33.5	850	47.8	1213	12.2	5.53	3/8	9.5
A370-BLE-022	11,100	5,030	35.5	902	50.5	1283	15.5	7.03	7/16	11.1

PART NUMBER	PISTON ROD DIAMETER		CLEVIS PIN & GAP	
	in	mm	in	mm
A370-BLE-006	9/16	14	7/16	11.1
A370-BLE-010	9/16	14	1/2	12.7
A370-BLE-012	5/8	16	5/8	15.9
A370-BLE-017	5/8	16	5/8	15.9
A370-BLE-022	3/4	19	3/4	19.1

Backstay Toggle

PART NUMBER**	LENGTH PIN-PIN	
	in	mm
A371-20A06	2.00	50.8
A371-20A10	2.00	50.8
A371-20A17A	2.33	59.2
A371-20A22	2.98	75.7

The A370 is supplied as standard with a black finish. To order a clear finish, please replace the -BLE in the part number with -CLE.

Integral Backstay Adjuster assembly includes handle, clevis pins and bushings (-6).

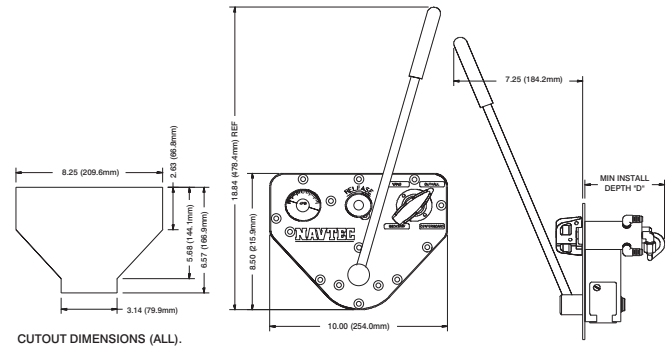
* Max relief setting is 4,000 psi, except for -6 and -12, which are 3,000 psi.

** -12 & -17 Cylinders use the A371-20A17A toggle.

System 50 Hydraulic Panel

The System 50 Hydraulic Panel is at the heart of a Navtec hydraulic system, putting the operator in complete control of up to four functions, including halyards, Cunningham, mast jack, traveller, vang, backstay, or outhaul functions. System 50 is designed to meet the changing requirements of racing and cruising yachts in the 35 to 70 foot LOA range.

- Ease of operation. Controlled flow, gradual release valve.
- High speed: Faster flow rate = faster response.
- Optional auto-shift pump. Two-speed pump offers high volume and fine pump functions with adjustable shift pressure.
- Power interface. Leading winch powerpacks can interface with, and be accurately controlled by, the System 50.
- Protection. Relief valve provides immediate pressure release for the selected function.
- Finish. Black anodized or stainless steel.
- Reservoir. The standard on a single function is a two-quart reservoir, with the four-quart capacity as standard on a multifunction panel.



PART NUMBER	DESCRIPTION	MIN. INSTALLATION DEPTH "D"		WEIGHT	
		in	mm	lbs	kg
A320-SF-01	single-function, single speed pump	3.75	95.3	10.1	4.58
A320-SF-02	single-function, 2 speed Auto-Shift pump	5.50	139.7	10.8	4.90
A320-MF-01	multi-fun-ton, single speed pump	4.50	114.3	13.0	5.90
A320-MF-02	multi-fun-ton, 2 speed Auto-Shift pump	5.50	139.7	13.7	6.21
A320-SF4-01	single-function, single speed pump, with 4-way valve *	5.50	139.7	14.3	6.50
A320-SMC-01	single to multi-function conversion kit	N/A	N/A	2.0	0.91

System 50 assembly includes pump, handle, valves, reservoir, hose and in-line filter.

For stainless steel faceplate option, add (S) to end of any above part number. Example: A320-SF-01S. Add 1.3 lbs to above assembly weights.

Multi-function panels can be used to control 1,2,3 or 4 hydraulic functions.

The 2-speed Auto-Shift pump supplies 300% more flow at low pressure.

Single-function panel assemblies include a 2 quart molded reservoir. Multi-function panels include a 4 quart reservoir.

* 4-way valve is to control double-acting (push-pull) cylinders.



System 50 - At the heart of Navtec hydraulic systems

5. Hydraulics

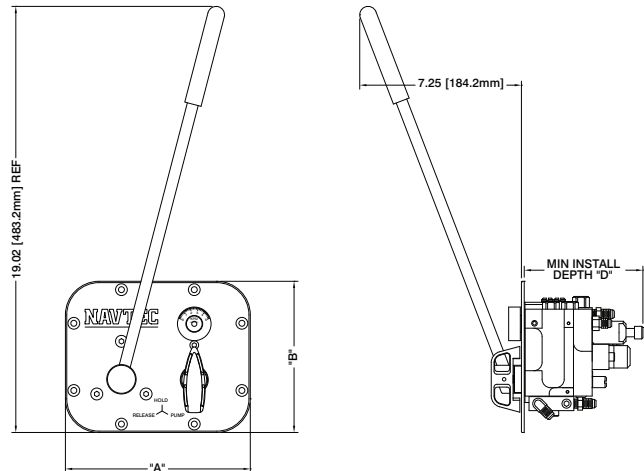
System VIII Hydraulic Panel Specifications

The System VIII panel incorporates cam valve technology developed by Navtec. Cam valves make the System VIII easier to use and more durable at higher pressures than other systems. This is why the new System VIII panel is an ideal choice for Grand Prix race yachts and Super Yachts, which demand the highest level of performance available.

The System VIII offers improved design aesthetics and the same configuration offered in the System VII panels. The cam valves are sculpted to save weight and space. Each output has its own valve and gauge to monitor the function that it is controlling, and a relief valve that can be set individually. Flow control can be added to each valve by simply inserting flow control needles into the outlet of each valve.

The System VIII panels can be easily integrated with powered units provided by Navtec, Lewmar, winch manufacturers, or custom ship designers.

System VIII panels come in multiple configurations. Standard panels come with a hard-coated aluminum face plate. Stainless steel panels are also available.



PART NUMBER	DESCRIPTION	PANEL LENGTH A		PANEL HEIGHT B		MIN INSTALLATION DEPTH "D"		WEIGHT STD ALUMINUM		WEIGHT SS FACEPLATE	
		in	mm	in	mm	in	mm	lbs	kg	lbs	kg
complete systems											
A380-L00-01	single-function, left-hand pump	8.25	209.6	6.75	171.5	5.50	139.7	12.2	5.52	13.4	6.07
A380-L00-02	two-function, left-hand pump	11.50	292.1	6.75	171.5	5.50	139.7	14.8	6.70	16.4	7.46
A380-L00-02/1 *	three-function, left-hand pump, 2 standard valves, 1 4-way valve	14.75	374.7	6.75	171.5	6.50	165.1	16.6	7.54	18.8	8.51
components											
A380-PO-02 **	2-speed Auto-Shift pump-only panel, no control valves	4.75	120.7	6.50	165.1	5.50	139.7	5.8	2.64	6.5	2.95
A380-VGM-01 ***	single-function, valve+gauge manifold only, no pump	5.00	127.0	6.75	171.5	4.75	120.7	3.0	1.36	3.7	1.68
A380-VGM-02 ***	two-function, valve+gauge manifold only, no pump	8.25	209.6	6.75	171.5	4.75	120.7	5.9	2.68	7.2	3.25
A380-VGM-03 ***	three-function, valve+gauge manifold only, no pump	11.50	292.1	6.75	171.5	4.75	120.7	8.6	3.90	10.3	4.68
A380-VGM-04 ***	four-function, valve+gauge manifold only, no pump	14.75	374.7	6.75	171.5	4.75	120.7	11.5	5.22	13.6	6.17

System VIII assembly and specified weights include auto-shift pump, handle, valves, 4-quart molded reservoir, hose and in-line filter, unless otherwise indicated.

For stainless steel faceplate option, add (S) to any above part number. Example: A380SL00-01.

Right-hand pump configuration available. Change (L) to (R) in any above part number. Example: A380-R00-01.

Other custom configurations available.

For cutout dimensions, subtract 1.50 in (38.1mm) from panel dimensions.

* 4-way valve is to control double-acting (push-pull) cylinders.

** Does not include reservoir, filter or hose.

*** Does not include reservoir or filter.



Navtec superyacht capability

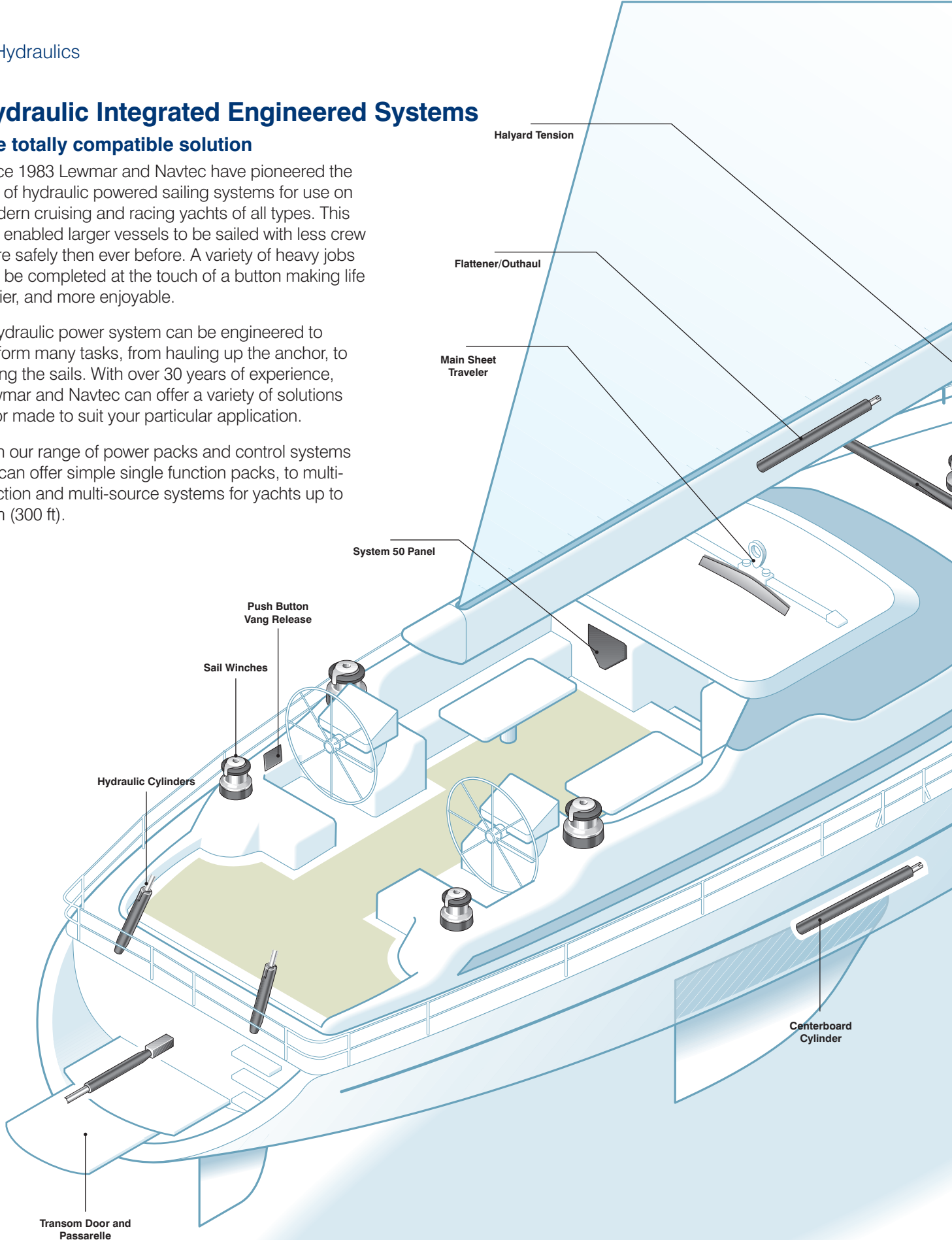
Hydraulic Integrated Engineered Systems

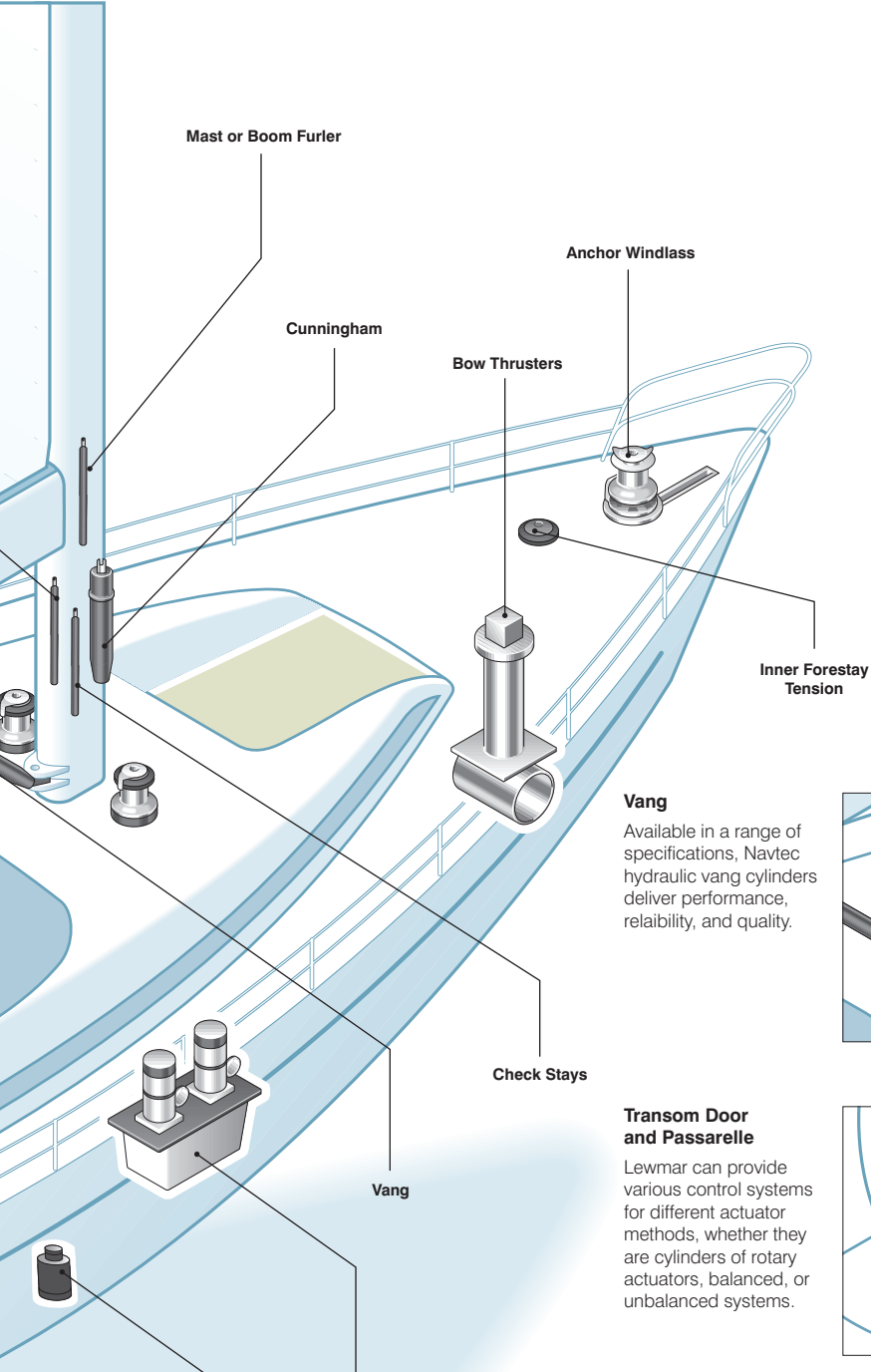
The totally compatible solution

Since 1983 Lewmar and Navtec have pioneered the use of hydraulic powered sailing systems for use on modern cruising and racing yachts of all types. This has enabled larger vessels to be sailed with less crew more safely than ever before. A variety of heavy jobs can be completed at the touch of a button making life easier, and more enjoyable.

A hydraulic power system can be engineered to perform many tasks, from hauling up the anchor, to furling the sails. With over 30 years of experience, Lewmar and Navtec can offer a variety of solutions tailor made to suit your particular application.

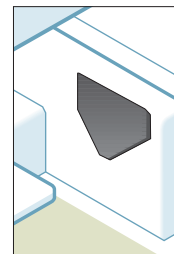
With our range of power packs and control systems we can offer simple single function packs, to multi-function and multi-source systems for yachts up to 90m (300 ft).





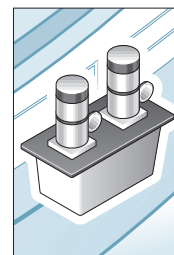
System 50 Panel

The System 50 Panel puts the operator in control of up to four hydraulic functions.



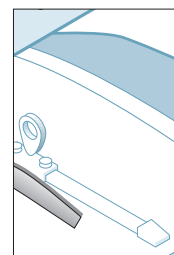
Commander Hydraulic Power Pack

A variety of power packs are available. Single/Multiple motor, various voltages, custom reservoirs, the list is endless.



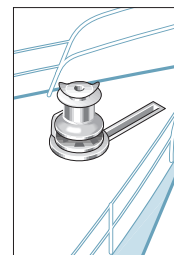
Sail Control Cylinder

Rig control cylinders can be concealed below deck, providing optimum control in areas that need to be kept clear.



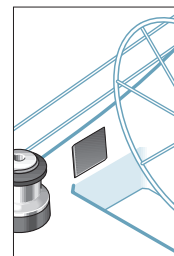
Anchor Windlass

The Lewmar anchor windlass is an ideal addition to the system, and affords an excellent level of performance.



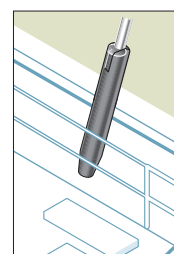
Push Button Vang Release

The Navtec 'Panic Button', providing crew with control of vang release from a remote control panel.



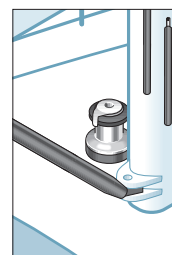
Hydraulic Cylinders

The sail handling system can be integrated with rig control cylinders including halyard tension, cunningham, and back stays.



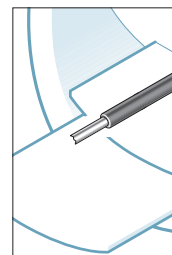
Vang

Available in a range of specifications, Navtec hydraulic vang cylinders deliver performance, reliability, and quality.



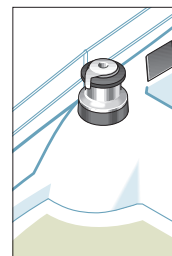
Transom Door and Passarelle

Lewmar can provide various control systems for different actuator methods, whether they are cylinders of rotary actuators, balanced, or unbalanced systems.



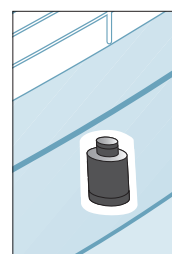
Sail Winches

Sail handling winches whether conventional, selftailing or captive line management systems.



Mast Jack

The ultimate tool for achieving high rigging tension preloads.



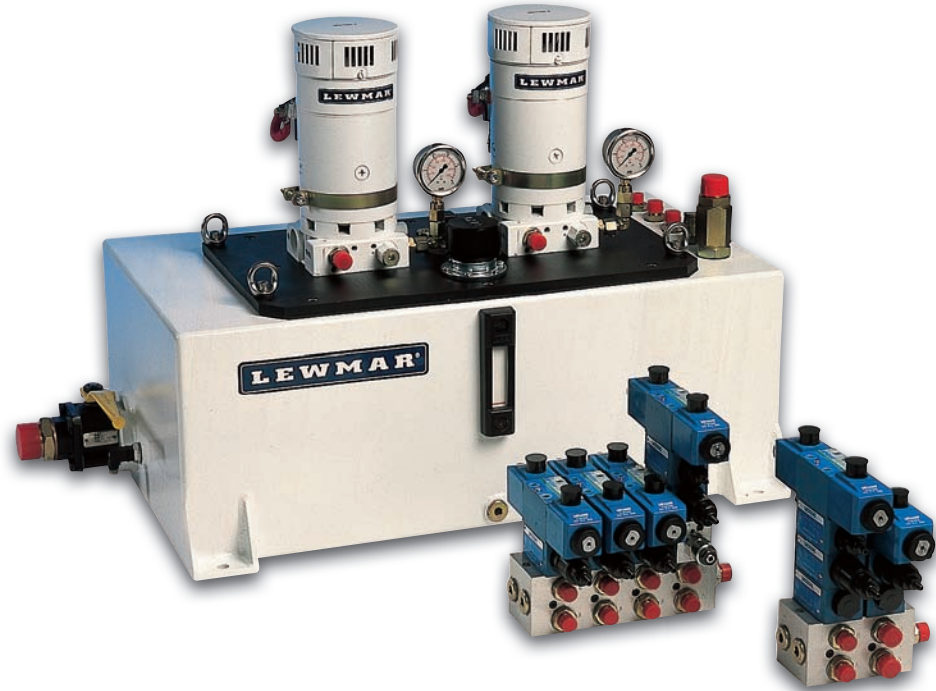
5. Hydraulics

Custom Commander

A fully-integrated Navtec bespoke hydraulics package is complemented by the Lewmar Custom Commander control unit, offering the peace of mind that is derived from installing a complete, engineered solution from a single manufacturer. Custom Commander Systems power both Navtec hydraulics and Lewmar winch, windlass, and furling systems, along with providing auxiliary power, all to the customer's specific requirement. Lewmar Custom Commander Systems have been used on over 200 yachts in the last 15 years – a testament to the popularity and reliability of the product.

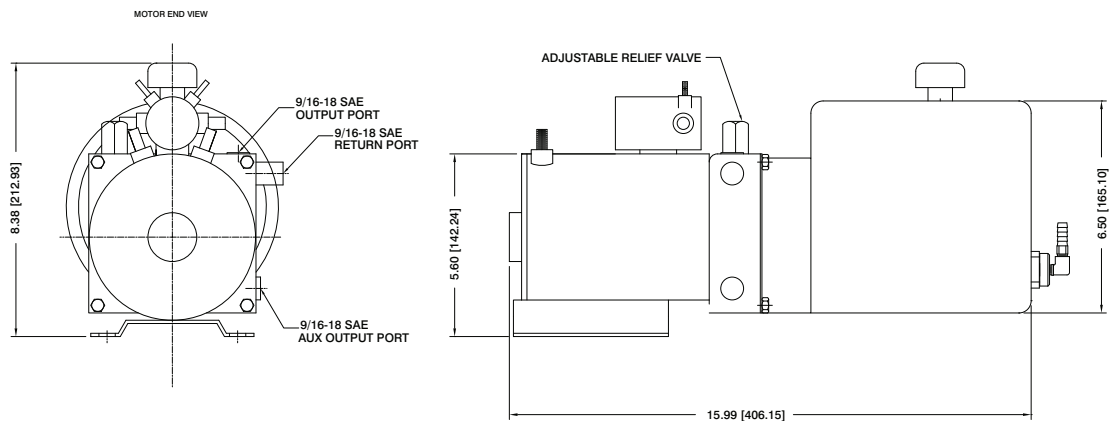
Features

- DC motors from 3–14 kw
- Multi motor combinations
- 3 phase AC versions
- AC/DC versions
- Custom-designed reservoirs
- Remote valve groups
- PLC control
- Electric & Hydraulic soft starts
- Various alarm outputs
- Fan cooled motors
- Thermal overload protection
- Proportional control
- Individual custom manual supplied



A050 Powered Pump System

The A050 is an economical way to power your Navtec panel. It can be used with System 50 or System VIII panels. The unit is designed to operate sail control cylinders through Navtec panels. The flow rate is not high enough to be used with winches, thruster or furlers. The Lewmar Custom Commander would be the choice if integrating all hydraulic functions. Please contact Navtec with your hydraulic specification and Navtec/Lewmar can design a system to meet your needs.



PART NUMBER	DESCRIPTION	LENGTH		WEIGHT*		FLOW RATE**	
		in	mm	lbs	kg	Gal/min	L/min
A050-04-J004	12V 4 Quart Pump Powerpack	16.0	406	29.0	13.15	0.8	0.21
A050-04-J005	24V 4 Quart Pump Powerpack	16.0	406	29.0	13.15	1.1	0.29
A050-04-J006	12V 3 Gal. Pump Powerpack	30.5	775	31.5	14.29	0.8	0.21
A050-04-J007	24V 3 Gal. Pump Powerpack	30.5	775	31.5	14.29	1.1	0.29

Max Powerpack pressure is 3,000 psi [205bar].

A050 Assembly includes Pump power pack with integrated reservoir and inline check valve. A050 assembly must be used in conjunction with System 50 or System VIII panel..

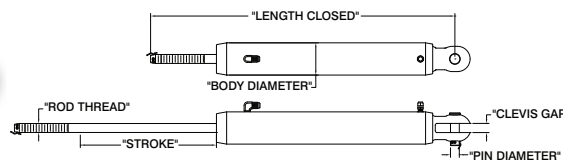
* Weights provided are for dry pump assembly, oil not included.

** Flow rate provided at 3,000 psi.

Hydraulic Cylinders

Minimal weight. Minimal windage. Maximum reliability. Navtec standard cylinder rods are made from 316 stainless steel. Tubes, lower clevis and caps are made of black hard-coated aluminum. Cylinder bores are specially polished for longer seal life. Navtec stainless steel cylinders represent the highest standard of performance worldwide, with 316 stainless construction throughout. Standard, Long, and Flattening Reef versions are available. Titanium componentry optional.

A250 HP Hydraulic Cylinder



CYLINDER SIZE	MAX PULL FORCE @ RELIEF		BODY DIAMETER		ROD THREAD unf 2a	CLEVIS PIN & GAP	
	lbs	kg	in	mm		in	mm
-6	3,200	1,450	1.32	33.5	7/16-20	7/16	11.1
-10	5,800	2,630	1.66	42.2	1/2-20	1/2	12.7
-12	7,600	3,450	2.00	50.8	5/8-18	5/8	15.9
-17	10,900	4,940	2.25	57.2	5/8-18	5/8	15.9
-22	13,900	6,300	2.50	63.5	3/4-16	3/4	19.1
-30	22,100	10,020	3.25	82.6	7/8-14	7/8	22.2
-40	32,200	14,610	4.00	101.6	1-12	1	25.4
-48	32,200	14,610	4.00	101.6	1-12	1 1/8	28.6
-60	42,900	19,460	4.50	114.3	1 1/4-12	1 1/4	31.8
-76	42,900	19,460	4.50	114.3	1 1/4-12	SEE NOTE *	
-90	57,700	26,170	5.50	139.7	1 1/4-12	1 3/8	34.9
-110	73,200	33,200	6.00	152.4	1 3/8-12	1 1/2	38.1
-150	90,600	41,100	7.00	177.8	1 1/2-12	1 3/4	44.5

Max relief setting is 5,000 psi.

A250 Cylinders

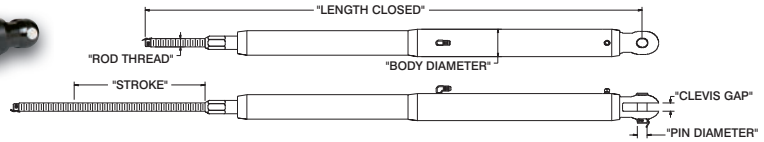
PART NUMBER	STROKE		LENGTH CLOSED		WEIGHT STD ALUMINUM	
	in	mm	in	mm	lbs	kg
A250-SE-006	9.0	229	18.7	474	1.9	0.86
A250-LE-006	13.5	343	23.2	589	2.3	1.04
A250-FE-006	20.2	513	29.9	759	3.2	1.44
A250-SE-010	9.0	229	19.5	495	2.7	1.24
A250-LE-010	13.5	343	24.0	609	3.3	1.49
A250-FE-010	20.0	509	31.1	789	5.0	2.27
A250-SE-012	9.5	241	21.1	536	4.4	2.01
A250-LE-012	14.2	361	25.8	656	5.6	2.54
A250-FE-012	24.1	611	36.1	916	8.6	3.92
A250-SE-017	9.5	241	21.2	539	5.1	2.31
A250-LE-017	14.2	361	25.9	659	6.3	2.84
A250-FE-017	30.0	763	42.9	1090	10.7	4.87
A250-SE-022	10.0	254	23.2	589	7.2	3.26
A250-LE-022	15.0	381	28.2	717	8.6	3.89
A250-FE-022	35.0	890	49.4	1255	15.4	6.99
A250-SE-030	11.0	279	26.6	675	12.6	5.71
A250-LE-030	16.5	419	32.1	814	15.4	6.98
A250-FE-030	40.0	1016	56.4	1433	30.0	13.61
A250-SE-040	12.0	305	28.6	726	20.3	9.22
A250-LE-040	18.0	457	34.6	879	24.8	11.26
A250-FE-040	45.2	1148	63.2	1606	44.0	19.96
A250-SE-048	12.0	305	28.8	733	20.9	9.48
A250-LE-048	18.0	457	34.8	885	25.4	11.52
A250-SE-060	13.9	353	32.5	827	33.0	14.97
A250-LE-060	21.0	533	39.7	1007	38.0	17.24
A250-SE-076	15.0	381	34.0	863	35.8	16.24
A250-LE-076	22.5	572	41.5	1054	42.9	19.46
A250-SE-090	16.0	406	36.1	917	50.0	22.68
A250-LE-090	24.0	609	44.1	1120	61.4	27.85
A250-SE-110	18.0	457	40.2	1022	67.5	30.62
A250-LE-110	27.0	686	49.2	1250	82.0	37.19
A250-SE-150	18.0	457	41.7	1060	97.5	44.23
A250-LE-150	27.0	686	50.7	1288	117.0	53.07

SE = standard cylinder, LE = long cylinder, FE = flattening reef cylinder. For stainless steel option, add (S) to end of any above part number. Example: A250SSE-010. Nuted pins standard -60 and above, nuted pins available on smaller sizes. Other custom cylinder configurations available. * PIN = 1 1/4 (31.8mm), GAP = 1 5/16 (33.3mm).

5. Hydraulics

A260 Mechanical Lock Hydraulic Cylinder Specifications

The Mechanical Lock allows the release of hydraulic pressure on the backstay cylinder while maintaining tension. However, there is no relief valve protection, as backstay tension is mechanically locked, not hydraulically controlled. This is useful for extended passages.



CYLINDER SIZE	LENGTH CLOSED		WEIGHT STD ALUMINUM	
	in	mm	lbs	kg
A260-SE-006	32.2	818	3.6	1.63
A260-LE-006	41.2	1046	4.1	1.84
A260-SE-010	32.9	836	5.0	2.27
A260-LE-010	41.9	1065	6.4	2.88
A260-SE-012	35.6	904	8.2	3.74
A260-LE-012	44.8	1138	10.5	4.76
A260-SE-017	35.7	907	8.9	4.04
A260-LE-017	45.1	1146	11.1	5.03
A260-SE-022	37.7	957	12.4	5.62
A260-LE-022	47.7	1211	15.2	6.89
A260-SE-030	42.9	1089	21.4	9.71
A260-LE-030	53.4	1357	26.6	12.07
A260-SE-040	47.0	1194	32.6	14.79
A260-LE-040	59.0	1499	40.4	18.33
A260-SE-048	47.2	1200	33.2	15.06
A260-LE-048	59.2	1505	41.0	18.60
A260-SE-060	54.4	1381	51.4	23.31
A260-LE-060	68.4	1737	64.0	29.03
A260-SE-076	57.3	1454	54.9	24.90
A260-LE-076	72.4	1838	67.5	30.62
A260-SE-090	60.8	1544	81.0	36.74
A260-LE-090	76.4	1941	97.0	44.00
A260-SE-110	66.9	1698	119.8	54.33
A260-LE-110	84.9	2155	145.0	65.77
A260-SE-150	70.6	1792	158.9	72.06

See HP cylinder information for all other technical data.
Nutted pins standard -60 and above, nutted pins available on smaller sizes.
For stainless steel option, add (S) to any above part number. Example: A260SSE-010.

Cylinder Terminals

H120 Fixed Clevis

The H120 screws onto the cylinder piston rod, but does not provide length adjustment.



J100 Eye/Jaw Toggle



H120 Fixed Clevis

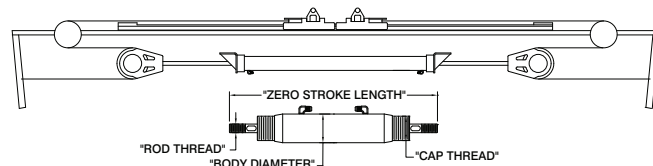
J100 Eye/Jaw Toggle

Used at the lower end of the cylinder to prevent excessive side loads. Frequently used on backstay and inner forestay cylinders.

CYLINDER SIZE	PISTON ROD SIZE		PIN DIAMETER		FIXED CLEVIS PART NUMBER	FIXED CLEVIS LENGTH		EYE JAW TOGGLE PART NUMBER	EYE JAW TOGGLE LENGTH	
	in	mm	in	mm		in	mm		in	mm
-6	7/16	11	7/16	11	H120-141414	1.00	25	J100-1414	2.00	51
-10	1/2	13	1/2	13	H120-161616	1.25	32	J100-1616	2.20	56
-12/-17	5/8	16	5/8	16	H120-202020	1.31	33	J100-2020	2.50	64
-22	3/4	19	3/4	19	H120-242424	1.38	35	J100-2424	2.90	74
-30	7/8	22	7/8	22	H120-282828	1.50	38	J100-2828	3.30	84
-40	1	25	1	25	H120-323232	1.50	38	J100-3232	3.69	94
-48	1	25	1 1/8	29	H120-323636	1.75	44	J100-3636	4.10	104
-60	1 1/4	32	1 1/4	32	H120-404040	2.50	64	J100-4040	4.50	114
-76	1 1/4	32	1 1/4	32	H120-404040	2.50	64	J100-4040	4.50	114
-90	1 1/4	32	1 3/8	35	H120-404444	2.50	64	J100-4444	5.60	142
-110	1 3/8	35	1 1/2	38	H120-444848	3.04	77	J100-4848	6.20	157
-150	1 1/2	38	1 3/4	44	H120-485656	3.43	87	J100-5656	7.50	191

A254 Hydraulic Traveler Cylinders

Navtec double rod cylinders were engineered and designed by Navtec for use in dual pull application, usually with a block and tackle incorporated. Navtec originally engineered these cylinders as a solution to operate main sheet travellers. They are also commonly used to operate genoa lead systems as well as many custom applications. Navtec will work with any marine hardware manufacturer to provide a cylinder that interfaces with their hardware to operate any double acting needs.



CYLINDER SIZE	CAP THREAD unf 2a	ZERO STROKE LENGTH		WEIGHT STD ALUMINUM	
		in	mm	lbs + lbs/in stroke	kg + kg/cm stroke
-6	1 1/8-16	11.9	301	1.2 + .1	.55 + .02
-10	1 7/16-16	13.4	341	2.2 + .1	.97 + .02
-12	1 5/8-16	14.8	377	3.5 + .2	1.58 + .04
-17	1 7/8-16	15.1	384	4.3 + .2	1.93 + .04
-22	2 1/8-16	18.1	461	6.7 + .3	3.02 + .05
-30	2 5/8-16	18.9	481	11.1 + .5	5.02 + .09
-40	3 1/4-16	20.6	522	18.2 + .8	8.22 + .13
-48	3 1/4-16	20.6	522	18.1 + .8	8.22 + .13
-60	3 3/4-16	22.9	582	27.3 + 1.0	12.37 + .17
-76	3 3/4-16	22.9	582	27.2 + 1.0	12.36 + .17
-90	4 3/8-8	32.7	830	44.3 + 1.5	20.10 + .27
-110	4 7/8-8	33.2	843	64.8 + 1.7	29.39 + .30
-150	5 3/8-8	35.2	895	89.6 + 2.6	40.65 + .47

Max relief setting is 5,000 psi. See HP cylinder information for all other technical data. Cylinders are designed on an individual basis. Specify desired stroke when ordering. Overall cylinder length equals zero stroke length plus two times the desired stroke.

Lewmar blocks are the ideal choice for the control lines leading from your A254 Cylinder to the traveler car. The chart below lists the adapters that allow you to connect Lewmar blocks directly to the Navtec cylinder rods on your A254 Cylinder. Please contact Navtec or Lewmar for help picking the exact blocks needed to drive your traveler car.

LEWMAR ADAPTOR PART NUMBER	RAM SIZE	ROD THD	BLOCK SIZE	LEWMAR BLOCK PART NUMBER	MAX SYSTEM PRESSURE	LEWMAR ADAPTOR PART NUMBER	RAM SIZE	ROD THD	BLOCK SIZE	LEWMAR BLOCK PART NUMBER	MAX SYSTEM PRESSURE
29914080	-6	7/16 RH	60mm	29942601	5000PSI / 350 Bar	29914091	-6	7/16 LH	60mm	29942601	5000PSI / 350 Bar
29914081	-10	1/2 RH	80mm	29942801 / 29902808	5000PSI / 350 Bar	29914092	-10	1/2 LH	80mm	29942801 / 29902808	5000PSI / 350 Bar
29914082	-12	5/8 RH	105mm	29902108	5000PSI / 350 Bar	29914093	-12	5/8 LH	105mm	29902108	5000PSI / 350 Bar
29914083	-17	5/8 RH	130mm	29902138	5000PSI / 350 Bar	29914094	-17	5/8 LH	130mm	29902138	5000PSI / 350 Bar
29914084	-22	3/4 RH	130mm	29902138	5000PSI / 350 Bar	29914095	-22	3/4 LH	130mm	29902138	5000PSI / 350 Bar
29914085	-30	7/8 RH	130mmHL	29912101	5000PSI / 350 Bar	29914096	-30	7/8 LH	130mmHL	29912101	5000PSI / 350 Bar
29914086	-10	1/2 RH	60mm	29942601	3000PSI / 250Bar	29914097	-10	1/2 LH	60mm	29942601	3000PSI / 250Bar
29914087	-12	5/8 RH	80mm	29942801 / 29902808	3000PSI / 250Bar	29914098	-12	5/8 LH	80mm	29942801 / 29902808	3000PSI / 250Bar
29914088	-17	5/8 RH	105mm	29902108	3000PSI / 250Bar	29914099	-17	5/8 LH	105mm	29902108	3000PSI / 250Bar
29914089	-22	3/4 RH	130mm	29902138	3000PSI / 250Bar	29914100	-22	3/4 LH	130mm	29902138	3000PSI / 250Bar
29914090	-30	7/8 RH	130mm	29902138	3000PSI / 250Bar	29914101	-30	7/8 LH	130mm	29902138	3000PSI / 250Bar

A270 Hydraulic Mast Jack Cylinders

The lightweight, compact A270 Mast Jack is the ultimate tool for achieving the high rigging tension preloads in today's yacht. The jack may be permanently installed or used on a removable basis for additional weight savings. The jack may be used at 5,000 psi / 7,500 psi with a Navtec panel, or at 10,000 psi with an industrial pump.

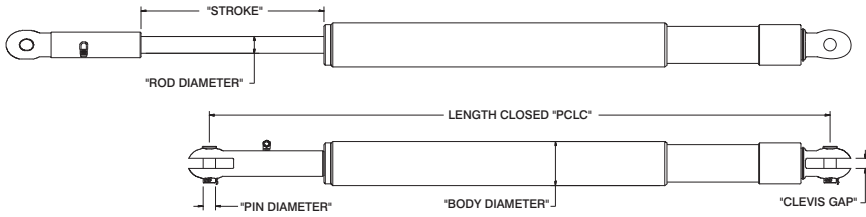


CYLINDER SIZE	MAX LOAD @ 5,000 PSI		MAX LOAD @ 10,000 PSI		STROKE		LENGTH CLOSED		BODY DIAMETER		WEIGHT	
	lbs	kg	lbs	kg	in	mm	in	mm	in	mm	lbs	kg
-12	9,200	4,170	18,400	8,350	3.0	76	6.7	170	2.8	70	3.0	1.4
-40	20,000	9,070	40,000	18,140	3.0	76	8.2	208	4.0	102	10.0	4.5
-70	35,000	15,880	70,000	31,750	3.5	89	9.6	244	5.3	135	17.0	7.7
-125	62,500	28,350	125,000	56,700	4.0	102	11.4	290	7.0	178	29.0	13.2

5. Hydraulics

A850 Hydraulic Vang Cylinder

Navtec's Series 850 Vang features an extra-large piston rod to resist buckling with no tackle to clutter the deck layout. It also provides boom lift in light airs and acts as a topping lift when the sail is flaked. The A850 can be integrated with an A440 Push Button Quick Release Valve, proving the ability to instantaneously dump the vang when required.



VANG SIZE	MAX PULL FORCE @ RELIEF		RETURN FORCE		ROD DIAMETER		CLEVIS PIN & GAP	
	lbs	kg	lbs	kg	in	mm	in	mm
-6	1,935	880	475	220	5/8	15.9	7/16	11.1
-10	3,785	1,720	815	370	3/4	19.1	1/2	12.7
-12	5,100	2,310	1,100	500	7/8	22.2	5/8	15.9
-17	7,010	3,180	1,490	680	1	25.4	5/8	15.9
-22	10,265	4,660	1,935	880	1	25.4	5/8	15.9
-30	15,890	7,210	3,010	1,370	1 1/4	31.8	3/4	19.1
-40	25,670	11,640	4,330	1,960	1 1/4	31.8	7/8	22.2
-60	34,320	15,570	5,880	2,670	1 1/2	38.1	1	25.4
-90	42,340	19,210	7,660	3,470	1 7/8	47.6	1 1/4	31.8
-110	53,220	24,140	9,680	4,390	2 1/8	54.0	1 3/8	34.9
-150	65,370	29,650	11,930	5,410	2 3/8	60.3	1 1/2	38.1
-195	84,520	38,340	15,580	7,070	2 3/4	69.9	1 3/4	44.5
-260	109,090	49,480	20,110	9,120	3 1/8	79.4	2	50.8
-400	168,400	76,380	30,400	13,790	3 3/4	95.3	2 5/8	66.7

STANDARD VANG	PART NUMBER POSITION-INDICATING	STROKE		AVAILABLE PCLC		AVAILABLE PCLC	
		in	mm	MIN in	mm	MAX in	mm
A850-VC-006	N/A	9.00	228.6	46	1168	60	1524
A850-VC-010	N/A	9.00	228.6	55	1397	72	1829
A850-VC-012	N/A	9.50	241.3	55	1397	89	2261
A850-VC-017	A850-PI-017	9.50	241.3	56	1422	100	2540
A850-VC-022	A850-PI-022	10.00	254.0	58	1473	104	2642
A850-VC-030	A850-PI-030	11.00	279.4	61	1549	107	2718
A850-VC-040A	A850-PI-040A	12.00	304.8	70	1778	150	3810
A850-VC-060C	A850-PI-060A	14.00	355.6	78	1981	175	4445
A850-VC-090C	A850-PI-090A	16.00	406.4	85	2159	185	4699
A850-VC-110B	A850-PI-110	18.00	457.2	90	2286	190	4826
A850-VC-150A	A850-PI-150	18.00	457.2	99	2515	195	4953
A850-VC-195	A850-PI-195	18.00	457.2	110	2794	360	9144
A850-VC-260	A850-PI-260	18.00	457.2	98	2489	360	9144

Position-Indicating Vang Electrical

Originally developed for super yachts, this unique feature is now available on all Navtec vangs down to -22. The position indicating unit is essential for achieving the correct angle for the new furling booms that have become common on boats from 50 feet and up. The Position Indicating Vang can be interfaced with most marine electronics.

	in	cm	
CABLE LENGTH	78.74	200	
RESISTANCE (KΩ)	44	total span	
RESISTIVE TOLERANCE	+/-20%		
ACCURACY	STD	BEST	
	mm	+/- .38	+/- .75
	in	+/- .015	+/- .030
POWER RATING (watts)	5.5 @ 70°C	0 @ 125°C	
OPERATING RANGE	MIN	MAX	
	°C	-40	125
	°F	-40	257

A950 Hydraulic Super Yacht Vang (Carbon)

The Navtec Carbon Fiber Superyacht Vang delivers the same performance, reliability, and quality that owners and designers have come to rely on from the Aluminum and Stainless Steel models, but with a substantial weight saving. The longer the vang, the larger the weight saving, resulting in an easier vang to install and maintain.



PART NUMBER	STROKE		AVAILABLE PCLC		AVAILABLE PCLC	
	in	mm	MIN		MAX	
			in	mm	in	mm
Carbon P/P PI						
A950-PI-PP-090	16.00	406.4	88	2235	192	4877
A950-PI-PP-110	18.00	457.2	94	2388	198	5029
A950-PI-PP-150	18.00	457.2	100	2540	220	5588
A950-PI-PP-195	18.00	457.2	100	2540	220	5588
A950-PI-PP-260	20.67	525.0	105	2667	284	7214
A950-PI-PP-400	20.67	525.0	114	2896	300	7620

- Substantial weight saving over Aluminum and Stainless Steel models
- Seamless, tapered, one-piece tube
- Smaller overall diameter than Aluminum and Stainless Steel models
- Carbon fiber weave or bespoke painted finish
- Available with push/pull or gas return options
- Position indicating feature available on request
- Both hydraulic connections for push/pull vang in oil jaw
- Custom clevis designs available for streamline connections

A850 Hydraulic Super Yacht Vang (Alloy)

The Navtec Alloy Hydraulic Superyacht Vang features a coaxial feed through the rod so both the push and pull hydraulic connections are located on the oil jaw. In addition, the A850 Vang can be equipped with the position indication function, to ensure that the correct angle for the furling boom is achieved.



PART NUMBER	STROKE		AVAILABLE PCLC		AVAILABLE PCLC	
	in	mm	MIN		MAX	
			in	mm	in	mm
Alloy P/P PI						
A850-PI-PP-090	16.00	406.4	88	2235	185	4699
A850-PI-PP-110	18.00	457.2	94	2388	190	4826
A850-PI-PP-150	18.00	457.2	96	2438	195	4953
A850-PI-PP-195	18.00	457.2	98	2489	360	9144
A850-PI-PP-260	18.00	457.2	105	2667	360	9144
A850-PI-PP-400	19.00	482.6	99	2515	360	9144

Carbon Wrap Cylinders

The Navtec Carbon Wrap Cylinder complements the style aesthetic of the A950 Carbon Fiber Superyacht Vang. A thin carbon veneer tube is applied to an A250 Cylinder resulting in the same carbon finish as the larger superyacht vang. For the specification of the A250 Cylinder, including the pull force, pin size, and rod size, please see page 79.



Navtec carbon wrap cylinders - A complimentary style aesthetic

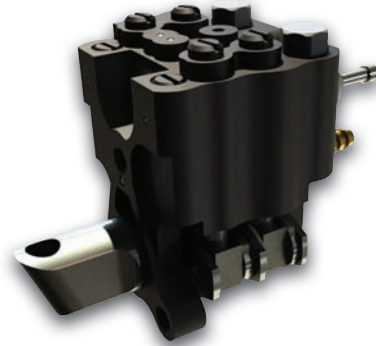
5. Hydraulics

Race Hydraulics

The Navtec Grand Prix hydraulic systems are designed to operate at pressures up to 7500 psi. Enjoying long standing relationships with multiple America's Cup winners, as well as high performance race fleets that include the Volvo Round The World Race and TP52s, the Navtec Grand Prix Hydraulic Systems have a proven track record in performance excellence.

Autoshift 7/8 Bore Hand Pump

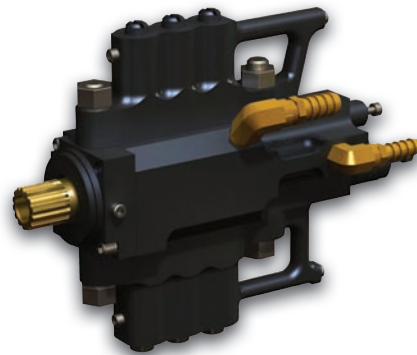
Developed with America's Cup teams, the Navtec Autoshift 7/8 Bore Hand Pump provides a lightweight pump with increased flow. The latest version of the Navtec race pump increases the size of the large bore pistons to 7/8" and the small bore pistons to 1/2", providing the maximum flow required for Grand Prix racing. Excess material is sculpted away, ensuring that the pump is as light as possible. Coupled with the A384 Race Valve, the Autoshift 7/8 Bore Hand Pump is at the heart of Navtec race hydraulic systems.



PART NUMBER		WEIGHT		MAX PRESSURE		OUTPUT FLOW BELOW SHIFT POINT		OUTPUT FLOW ABOVE SHIFT POINT		PRESSURE PORT	SUCTION & TANK PORTS
		lbs	kg	psi	bar	in3/ strk	ml/ strk	in3/ strk	ml/ strk		
A020-03-01A	5/8" A/S HAND PUMP	4.15	1.88	5,000	345	0.22	3.61	0.68	11.14	7/16"-20 JIC	3/8" HOSE BARB
A020-05-01A	LT TI 7/8" A/S HAND PUMP	3.54	1.61	7,500	517	0.29	4.70	1.17	19.17	7/16"-20 JIC	3/8" HOSE BARB
A020-05-02A	LT SS 7/8" A/S HAND PUMP	3.88	1.76	7,500	517	0.29	4.70	1.17	19.17	7/16"-20 JIC	3/8" HOSE BARB

A634 Rotary Autoshift Pump

The A634 Rotary Autoshift Pump is the latest in the Navtec line of rotary pumps. The A634 is the ideal choice for the manual hydraulic system on Grand Prix race yachts with a pedestal winch system. The pump can be integrated with a Lewmar light-weight carbon pedestal system, providing an ergonomic way of producing the high flow rates needed to operate cylinders in the racing environment. Manufactured from high strength alloy with extra material sculpted away to achieve the lightest pump possible, the Navtec Rotary Pump can be fitted to most manufacturer's winch components. The A634 Rotary Pump has one shift point and a built in adjustable relief point.



	WEIGHT		INSTALLATION DIMENSIONS						OUTPUT FLOW *			
			LENGTH		WIDTH		HEIGHT		LOW PRESSURE		HIGH PRESSURE	
	lbs	kg	in	mm	in	mm	in	mm	gpm	lpm	gpm	lpm
2 BANK PUMP	5.51	2.5	10.4	264	3.6	91	7.6	193	0.8	2.9	0.2	0.9

CUSTOMER CONNECTIONS	LOW PRESSURE		HIGH PRESSURE	
	3/8 & 1/2 BARB		37° JIC 7/16-20	
Fluid Requirement	ISO VG 15 or 32 hydraulic oil			
Maximum Rotational Speed	200	rpm		
Output Pressure **	psi	bar		
	7,500	517		

Optional splined input shafts accept Lewmar® winch handles.

* Theoretical output at 200 RPM. Typical overall efficiency is >85%.

Pedestal Systems

Navtec hydraulic pumps simply integrate with Lewmar pedestal systems. Over the last 40 years, Lewmar has worked closely with some of the best teams and sailors to develop bespoke systems tailored to specific requirements.

The unique Lewmar “i Beam” belt drive pedestals are moulded in carbon fiber with an optimized layup schedule that ensures maximum stiffness and efficiency. Lewmar are able to offer straight or twisted pedestals and our fat grip pedestal racing handles are ideal for the biggest strongest grinders you have on the team.

Drive components are fabricated of hardcote-anodized aluminum and titanium or 17-4 PH stainless steel. Ceramic upper and torlon lower bearings along with the carbon-reinforced drive belts ensure the lowest possible weight whilst retaining maximum efficiency.

In addition to the standard below-deck drives, we can offer pedestals that can be removed to open up cockpit space for long-distance racing or cruising. These systems can be removed in just a few minutes and the winches operated to top action using a standard winch handle.



A384 7500psi Valves

Standard Light CAM Valve

The Navtec Light CAM 3-position valve is the standard valve for use with a single acting M cylinder. Each manifold-mounted 7500 psi unit has an adjustable pressure relief valve, an optional flow control valve, and a non-interconnect check valve. The check valve is designed to prevent interconnection between two open valves which are controlling different cylinders. Excess material has been meticulously sculpted from the valve blocks, resulting in an incredibly lightweight solution. An optional flow control limits the cylinder release rate without restricting the pumping flow, resulting in a slow release rather than shock loading the rig. This is ideal for checkstay and jumper strut cylinders.

Light 4-Way CAM Valve

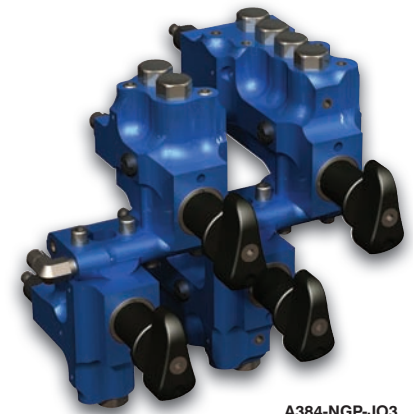
The Navtec light 4-way CAM valve is designed to operate the double-acting cylinders typically used in traveller, lead puller, centerboard, and push/pull applications. The unit includes separately adjustable relief and flow control valves.



A384-NGP-4000



A384-NGP-J11



A384-NGP-J03

M Cylinders

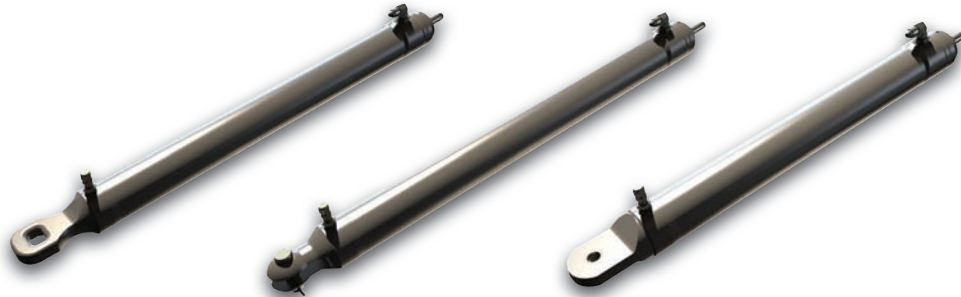
The Navtec ultra-light, custom 7500 psi M Cylinder delivers maximum muscle where it is needed most on the world's top racing yachts. The standard on TP52s, IRC designs, and high-performance race yachts, the M Cylinder has helped drive America's Cup class winners since 1992.

By designing a cylinder that operates at 7500 psi rather than the standard 5000 psi or the heavier 10,000 psi, Navtec have improved the hydraulic working performance. Higher pressure results in faster performance alongside a reduction in size and weight. Machined from one long bar with an integral cylinder end fitting, weight has been reduced by eliminating the need for a mechanical end fitting. Eliminating the need for seals at the cylinder end has reduced the overall length. Machining the cylinder from a solid bar means that an unlimited number of end fittings can be incorporated, including clevis, jaw, eye, lashing eye, and threaded.

For the America's Cup yachts, the Navtec cylinder is machined from a high-strength 7000 series aluminum material, while a more marine stable 6000 series aluminum is used for grand prix race yachts where longer life span is required. While the 6000 series aluminum increases the weight of the cylinder by approximately 6%, the life span increases from 2-3 years to 6-8 years without compromising on performance.

The M Series Cylinder integrates with the Navtec 7500 psi Valve, providing a sophisticated hydraulic system that delivers the highest level of performance.

A284 M-Cylinders



CYLINDER SIZE	ROD THREAD	ROD DIAMETER		PIN & GAP		TUBE OD		MAX PULL LOAD*		MAX PUSH LOAD**	
		in	mm	in	mm	in	mm	lbs	kgs	lbs	kgs
M19	5/16 - 24	31/99	8.0	3/8	9.5	1.07	27.2	2,980	1,350	3,600	1635
M25	3/8 - 24	3/8	9.5	7/16	11.1	1.37	34.8	5,100	2,315	5,910	2680
M33	7/16 - 20	38/87	11.1	1/2	12.7	1.79	45.5	9,010	4,090	10,220	4635
M39	1/2 - 20	1/2	12.7	5/8	15.9	2.08	52.8	12,320	5,590	13,720	6225
M45	5/8 - 18	5/8	15.9	5/8	15.9	2.42	61.5	16,320	7,405	18,620	8450
M52	11/16 - 16	64/93	17.5	3/4	19.1	2.76	70.1	21,430	9,725	24,240	11000
M64	13/16-16	13/16	20.6	7/8	22.2	3.43	87.1	33,750	15,315	37,670	17090

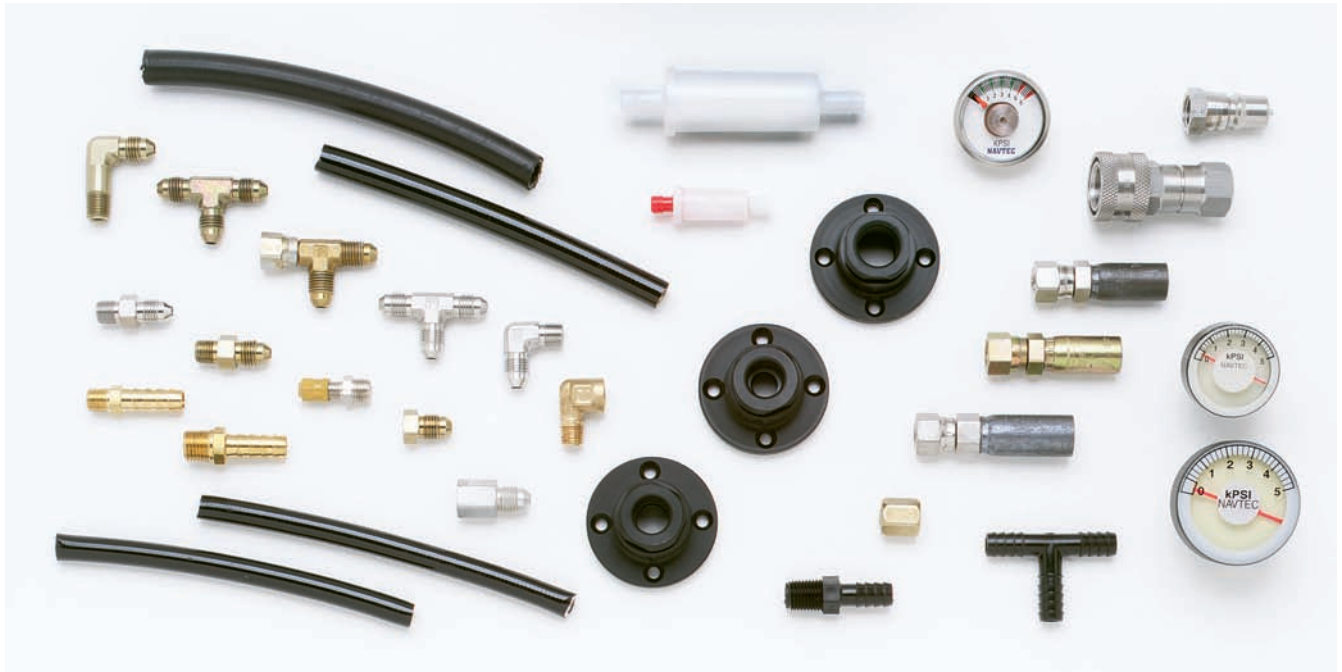
M Series Vang

The M Series Vang incorporates an M Series Cylinder with a carbon fiber/Kevlar extension tube to produce a unit that operates in the same way as the Navtec Light Vangs. The standard version uses an internal tie rod to carry the tension load, while a gas-charged option is available where return pressure is required. Removing the tie rod reduces weight, with the carbon/Kevlar tube carrying both the tension and compression loads. In this instance, the tube is glued permanently to the cylinder and the clevis. The Navtec M52 Vang is suitable for use in predominately light sailing conditions, while the Navtec M64 Vang is suitable for use on larger boats where the loads are higher.



Hydraulic Plumbing Spares

Navtec can provide all your hydraulic needs by offering a full line of hydraulic hose and fittings needed to plumb Navtec systems. Contact your Navtec agent for assistance in plumbing your system.



PART NUMBER	DESCRIPTION
Low Pressure Hose	
HO-008	3/8" Low Pressure Hose/Ft.
HO-009	1/2" Low Pressure Hose/Ft.
High Pressure Hose	
HO-001	3/16" KEVLAR HOSE/FT
HO-002	1/4" KEVLAR HOSE/FT
HO-003	3/8" KEVLAR HOSE/FT
HO-005	3/16" NAVTEC SPECTRA HOSE /FT.
Deck Gland	
A900-A01	3/16" THRU DECK GLAND
A900-A09	1/4" THRU DECK GLAND
A900-A11	3/8" THRU DECK GLAND
Swage End Cadmium	
HB-016	3/16"Hose-1/4"37 ^ JIC Swage End
HB-018	1/4"Hose-1/4"37 ^ JIC Swage End
HB-020	3/8"Hose-3/8"37 ^ JIC Swage End
Swage End Stainless Steel	
HB-017	3/16"Hose-1/4"37 ^ JIC Swage End
HB-019	1/4"Hose-1/4"37 ^ JIC Swage End
HB-020-01	3/8"Hose-3/8"37 ^ JIC Swage End
Gauges	
A060-01-00	1 1/2" GAUGE-SR#7 INTGRL &SYS V
A060-02-03	2" GAUGE-SYSTEM 50
HC-077-06	LE INTEGRAL GAUGE-SERIES 8 and 9
Filter	
HO-012	Lg. In-Line Filter(for 3/8"H)
HO-011	Sm. In-Line Filter(for 1/4"H)

PART NUMBER	DESCRIPTION
Misc Fittings And Connectors	
HB-093	1/4"-37 ^ JIC CAD Plug
HR-020	1/4"-37 ^ BRASS Cap
HC-074	Air Valve ASSY.
HB-085	1/4"-37 ^ Cad STRAIGHT Union
HB-088	1/4"-37 ^ Cad "T" Union
HB-078	1/8"NPT 1/4-37 ^ JIC CAD StrConn
HB-068	1/8"NPT 1/4-37 ^ JIC CAD ELBOW
HB-066	1/8"NPT 1/4-37 ^ JIC CAD LONG ELBOW
Misc Stainless Fittings And Connectors	
HB-086	1/4"-37 ^ SS STRAIGHT Union
HB-089	1/4"-37 ^ SS "T" Union
HB-079	1/8"NPT 1/4-37 ^ JIC SS StrConn
HB-069	1/8"NPT 1/4-37 ^ JIC SS ELBOW
HB-335	1/8"NPT 1/4-37 ^ JIC SS LONG ELBOW
Hose Barb Fittings	
HB-025	125HBL-6-2 Hose Barb Straight
HB-027	125HBL-6-4 Hose Barb Straight
HB-022	1/8" NPT Male x Female Elbow
HB-242	3/8"Plastic Hose Barb 'T'
HB-126	5/16" ID Hose Clamp(Low Press)

5. Hydraulics

Hydraulic Spares Handle Holder

Auto-shift Pump Handle #: A031-A11
 Two-speed Pump Handle #: A021-A11
 One-speed Pump Handle #: A031-A11
 Integral Pump Handle #: A371-A25
 Handle Holder #: A021-24-01



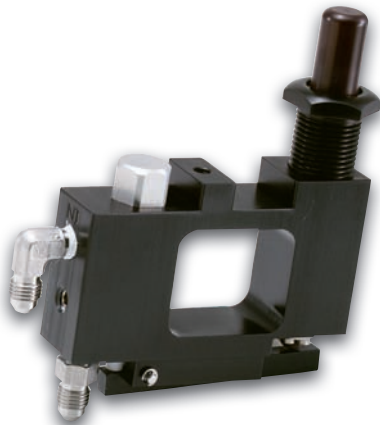
V100 Navtec Hydraulic Oil

The high-grade Navtec Hydraulic Oil is selected for use in all Navtec hydraulic systems. The versatility and convenient size of this product will make it an essential part of a boat's utility kit.



A440 Push Button Quick Release Valve

The Navtec 'Panic Button' has proven to be a popular component of a hydraulic vang system. By locating the Quick Release Valve away from the central control panel, the crew has control of the vang release from any desired position on the boat. Easy to operate, the valve is only released when the button is held down, meaning that it cannot be left open. Available with different plunger lengths for different panel thicknesses, the valve is easy to mount and watertight. When a hydraulic vang is integrated with a Quick Release Valve and a -6 hose, it achieves the responsiveness of a mechanical vang with the added benefit of the additional mechanical performance gained from a hydraulic system. The Push Button Quick Release Valve can be used with a hydraulic outhaul.



Pump Seal & Repair Kits

A020-SK-01	Seal Kit, Manual Two Speed Pump
A020-SK-02	Seal Kit, Auto shift Pump
A020-RK-01	Repair Kit, Manual Two Speed Pump
A020-RK-02	Repair Kit, Lt Auto shift Pump
A020-RK-02A	Repair Kit, Lt Auto shift Pump w/ deep piston seals
A030-SK-01	Seal Kit, One Speed Pump
A030-RK-01	Repair Kit, One Speed Pump

Sys V and 50 Valve Seal Kits

A280-SK-02	Seal Kit, System 50 Valve Block
A310-SK-01	Seal Kit, System V Valve
A400-01-SK	SYTM 50 SELECTOR VAVLE SEALKIT
A400-01-RK	REPAIR KIT, 5-W HF SEL VALVE

FAC and CAM Valve Seal & Repair Kit

A340-SK-01	Seal Kit, 5000/7500 FAC Valve
A340-RK-01	Repair Kit, 5000/7500 FAC Valve
A350-SK-01	SEAL KIT FOR 2-WAY CAM VALVE
A350-RK-01	REPAIR KIT FOR 2-WAY CAM VALVE
A350-SK-02	SEAL KIT, SYS 8 AC CAM VALVE
A350-RK-02	REPAIR KIT, SYS 8 AC CAM

A440-A-01A Seal Kit

A440-SK-01	Seal Kit, Push Button Quick Release Valve
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Cylinder Seal Kits

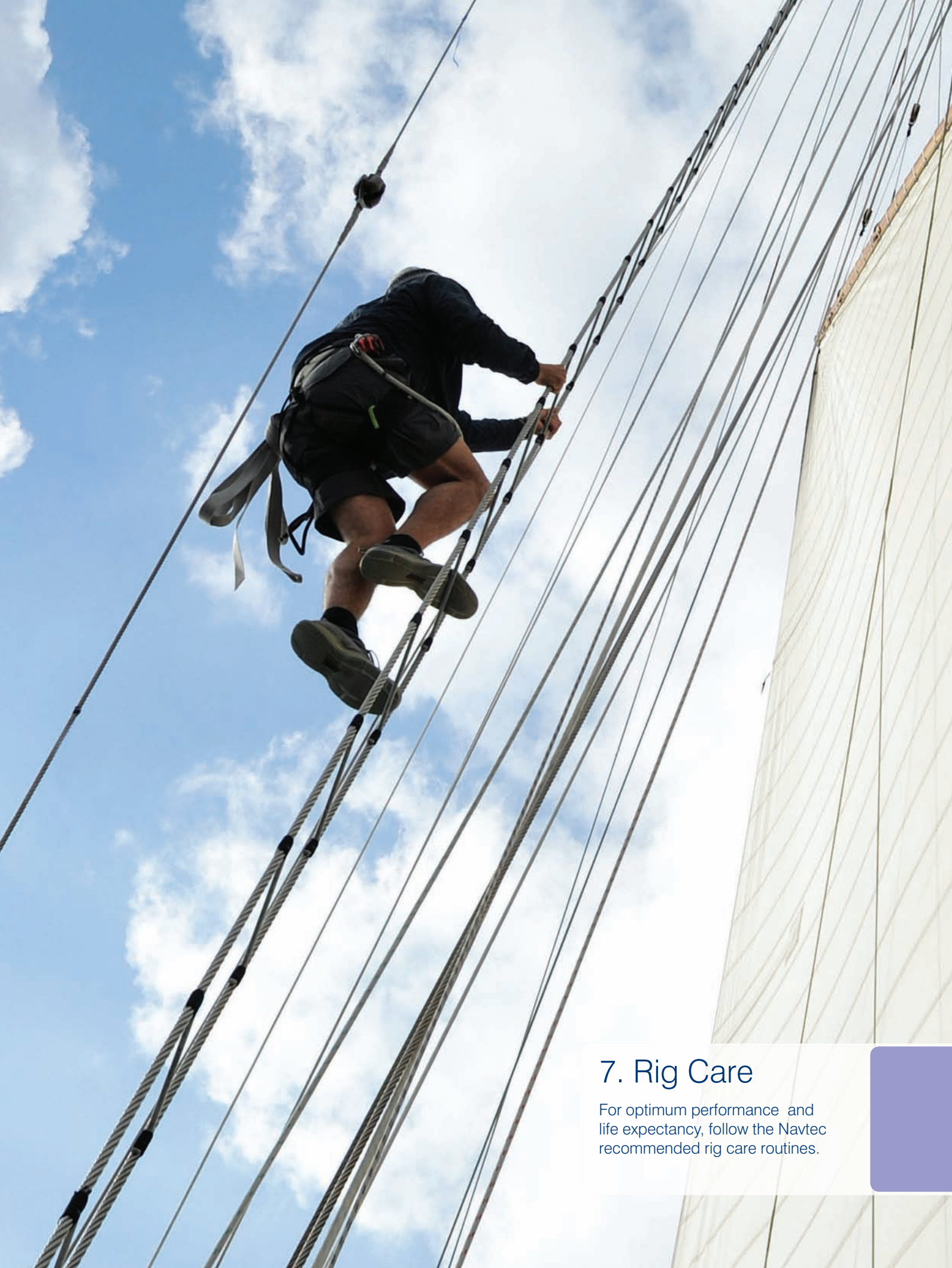
A250-CSK-006	Seal Kit, -6 Cylinder
A250-CSK-010	Seal Kit, -10 Cylinder
A250-CSK-012	Seal Kit, -12 Cylinder
A250-CSK-017	Seal Kit, -17 Cylinder
A250-CSK-022	Seal Kit, -22 Cylinder
A250-CSK-030	Seal Kit, -30 Cylinder
A250-CSK-040	Seal Kit, -40 Cylinder
A250-CSK-060	Seal Kit, -60 Cylinder

Vang Seal Kits

A850-SK-006	Seal Kit, -6 Vang
A850-SK-010	Seal Kit, -10 Vang
A850-SK-012	Seal Kit, -12 Vang
A850-SK-017	Seal Kit, -17 Vang
A850-SK-022	Seal Kit, -22 Vang
A850-SK-030	Seal Kit, -30 Vang
A850-SK-040	Seal Kit, -40 Vang
A850-SK-060	Seal Kit, -60 Vang
A850-SK-060B	Seal Kit, -60B Vang

Integral Seal Kits

A370-SK-010	Seal Kit, -6/10 Integral, Series 7
A370-SK-017	Seal Kit, -12/17 Integral, Series 7
A370-SK-022	Seal Kit, -22 Integral, Series 7
A370-SKLE-010	Seal Kit, LE Integral, -6/-10, Series 8
A370-SKLE-017	Seal Kit, LE Integral, -12/-17, Series 8
A370-SKLE-022	Seal Kit, LE Integral, -22, Series 8
A370-SKS9-010	SEAL KIT SER9 INTEGRAL, -6/-10
A370-SKS9-017	SEAL KIT SER9 INTEGRAL, -12/17
A370-SKS9-022	SEAL KIT SER9 INTEGRAL, -22



7. Rig Care

For optimum performance and life expectancy, follow the Navtec recommended rig care routines.

Navtec Recommended Rig Care

Performance, reliability, and safety depend on routine mast and rigging inspection schedules, whether you are a cruiser or an America's Cup contender. The following information and guidelines outline a recommended service schedule, are an introduction to rod, wire, and fiber rigging life expectancy, and answer some general questions regarding maintenance. **For more information, please refer to the Navtec Rigging Service Guidelines which can be downloaded from www.navtec.net.**

CATEGORY	DISPLACEMENT CHARACTERISTICS	TYPICAL PURPOSE CHARACTERISTICS	TYPICAL HANDLING CHARACTERISTICS
I	Motor Sailor/Heavy Cruiser	Ocean Going	Handled by Crew
II	Mid Displacement	Offshore	Handled by Crew, Owner or Shorthanded
III	Light Displacement	Coastal Pleasure Cruising/Club Racing	Handled by Crew, Owner or Shorthanded
IV	Ultra Light Displacement	Racing	Handled by Professional Crew

YACHT DISPLACEMENT CLASSIFICATIONS

The marine technical monitoring group, Germanischer Lloyd, has put together the following outline chart outlining yacht classifications, with input from Navtec and other mast and rigging suppliers. These different displacement categories will tend to experience different usage, mileage and sailing conditions. Full inspection intervals will vary depending on which category your yacht falls into.

CATEGORY I & II

Heavy displacement sailing vessels, (i.e. large cruising yachts or super yachts), have a different criteria for general rig inspections because they tend to accumulate many more miles than typical racing yachts. The same is true, but to a lesser degree, for mid displacement yachts. Also, the useful lives of heavy displacement sailing vessels tend to be much longer than the normal useful (competitive) life of racing yachts. For this reason, rigging design generally shifts toward longevity rather than ultimate performance concerns.

These concerns stem from the fact that these yachts generally do not bend their masts significantly to control sail shape. Many use simple marine eye and toggle terminations, which are heavier than typical high-performance fittings but have much better alignment capabilities under load. In these cases, bending stresses are minimal, and the controlling failure mode frequently shifts to simple tensile fatigue.

If failure occurs, tensile fatigue failures generally occur after a much larger number of loading cycles than bending fatigue failures. Large cruising yachts and super yachts frequently sail 15,000 to 30,000 miles per year and can reach large mileages quickly, leading to the possibility of tensile fatigue failure.

As a result, maintenance and inspection issues shift into a slightly different schedule and mindset as Safe Working Load (SWL) issues are not the primary concern.

CATEGORY III & IV

Light and ultra light displacement yachts generally have different sailing characteristics (e.g. mast bend and rake), and use higher loading scenarios with smaller rod in their rig plans than heavier displacement yachts. These working issues will potentially generate higher loads on the rod and fittings than published Safe Working Load. It is not unheard of for racing yachts to operate at 40-50% of the breaking strength of the rod.

This creates a shorter working life in the rod and fittings and should reflect in the frequency and intensity of the maintenance and inspection schedule for your yacht. Frequent inspection is necessary and will guarantee that any problems are caught before they become catastrophic.

Mast System Inspection Categories

LEVEL A Visual Inspection with Mast In	LEVEL B Visual Inspection with Mast In - Jack Down	LEVEL C Full service with Mast Out
Comprehensive general mast system visual inspection	Pre-check rig to assess service (Level A Inspection)	Pre-check rig to assess servicing schedule (Level A Inspection)
Check all fittings/terminations, rod/fiber/wire, spreaders, sheaves, halyards, headstay, backstay, mast base, partners, haylard blacks and chainplates	Un-jack mast	Un-step mast
Check for cracks, corrosion, pitting, rust	General visual inspection	Complete disassembly of mast/fittings
Service log/update schedule for next service	Check for bends/kinks in fittings and rod	Visual Inspection. Clean/polish rod, cold heads and fittings to facilitate inspection process. Visual inspection for cracks, corrosion, pitting, rust, general discoloration: remember rust indicates cracks
-	Check/lubricate all accessible fittings	Non-Destructive Testing (NDT) of Rod. Navtec recommends: Dye penetrate testing (liquid penetration testing) by authorized professional. Alternative methods: x-ray, ultrasound testing, eddy current testing
-	Properly re-tune to align and seat all cold heads and hardware, and generate proper tension/tuning	Visually inspect and Safe Working Load (SWL) pull test all fiber rigging
-	Service log/update schedule for next service	Make repairs as needed: re-head rod, replace any fittings or rigging screws
-	-	Reassemble mast system
-	-	Update service log/update schedule for next service
-	-	Re-step/re-tune mast

RECOMMENDED MAINTENANCE INSPECTIONS

Mast system inspections should be conducted regularly and schedules should be based on the size and general classification of your yacht. Controlling variables are displacement and type of usage. Heavy displacement yachts falling into Category I & II will have different inspection criteria based on tensile fatigue issues rather than those of category III & IV, which will base inspection intervals on usage and potential Safe Working Load issues. The following inspection scenarios should be implemented based on general usage and predominant sailing conditions. At a minimum, Navtec recommends a Level A mast system inspection at least once a year, regardless of yacht classification category.

ROD AND WIRE RIGGING LIFE EXPECTANCY

The most prominent factors that affect the longevity of rod and wire rigging are:

1. Length of time / miles that the yacht has been in service.
The more usage the yacht gets the more frequently inspections should be done.
2. Breaking strength / load ratio.
The closer the actual loads the rigging encounters are to the rated breaking strengths, the shorter the life expectancy.
3. Predominant sailing conditions.

If the yacht is frequently sailed in heavy air conditions, the life of the rod or wire will be shorter than if the boat is sailed infrequently, or in lighter wind conditions.

4. Frequency of care and maintenance

If the rigging has been periodically checked, the end fittings rinsed with fresh water, and general care and maintenance have been employed, it will last longer.

5. Environmental conditions

Where the rigging is constantly subjected to an environment with substantial air pollution, airborne contaminants will shorten the mast system's life span. Frequent cleansing and inspection is recommended.

6. Rod passes routine inspections

If the rod passes a Level C inspection, the rod may last an additional 20,000 to 30,000 miles. Navtec recommends rod re-heading and a stringent maintenance and inspection schedule.

7. T-hooks

Due to the design, the life expectancy of the T-hook is much shorter than rod or wire rigging. They should be diligently inspected and replaced.

7. Rig Care

WHAT TO LOOK FOR WHEN INSPECTING ROD RIGGING:

- Cracks, particularly in a transverse orientation. Typically cracks can be found using visual inspection.
- Rust
- Corrosion
- Pitting
- Black streaks
- Visible wear

If the rod and fittings show any of these symptoms, you should consult an authorised Navtec Service Agent.

WHAT TO LOOK FOR WHEN INSPECTING WIRE RIGGING:

- Signs of corrosion, rust, or pitting, particularly in the lower fittings.
- Cracks or corrosion on swage fittings, particularly on the inside edge where the wire exits.
- Signs of wear and/or cracks in swageless fittings.
- Rust on the wire or 'rouging', which generally comes from the fittings and bleeds down the wire.
- Broken strands or 'meat hooks' are a sign of fatigue failure. When broken strands are identified, the wire should be replaced immediately.

If the wire and fittings show any of these symptoms, you should consult an authorised Navtec Service Agent.

FIBER RIGGING LIFE EXPECTANCY

Due to the construction of fiber rigging, the factors that affect the longevity of the rigging differ from those that affect wire and rod rigging.

1. UV Damage

Where the fiber is exposed, it can degrade due to exposure to UV light and moisture. This may happen where the external jacket has been cut or chafed, for example, by contact with a jib sheet or a halyard. Any exposure to UV can cause property degradation, loss in strength, and potential failure of the fibers.

2. Humidity

Exposure of the core fibers to high relative humidity and elevated temperatures for a length of time can cause a loss in fiber strength.

PBO CABLE LIFE EXPECTANCY

Where PBO cable has been used in the application for which it is intended and has been inspected regularly as recommended by Navtec, the following life expectancy can be expected:

- If the maximum working load is less than 25% of the cable's rated strength (lateral or side rigging – stretch application), Navtec recommends changing the cable following 26,000 to 30,000 miles or 3 years of use, whichever comes first.
- If the maximum working load is more than 25%, but less than 35% of the cable's rated strength (headstay or running backstay – strength application), Navtec recommends changing the cable following 17,000 to 20,000 miles or 2 years of use, whichever comes first.

KEVLAR CABLE LIFE EXPECTANCY

Where Kevlar cable has been used in the application for which it is intended and has been inspected regularly as recommended by Navtec, the following life expectancy can be expected:

- If the maximum working load is less than 40% of the cable's rated strength, Navtec recommends changing the cable following 26,000 to 30,000 miles or 4 to 6 years of use, whichever comes first.

What to look for when inspecting fiber rigging:

- Signs of damage, abrasion points, or breaks in the external cover
- Heat shrink pulling away from end fitting or the cable. This is not unusual and will not affect the integral seal, but should be monitored.
- Severe wear, bent pins, corrosion, or cracks in metal fittings attached to terminations.
- Cracking on Z-System carbon termination covers or opening at the glue seam.
- Chafe and degradation of the cover on Z-system cable midspan.
- Cracks on T-hooks.

If the fiber cable and fittings show any of these symptoms, you should consult an authorised Navtec Service Agent.

PLEASE NOTE

- It is not necessary to open biconic terminals for internal visual inspection. Doing so will break the factory-installed seal designed to protect the internal fibers.
- As a state-of-the-art rigging solution, routine visual inspection of the jacket and termination points should be carried out frequently. On a passage and during a regatta, this should take place daily.

GENERAL INFORMATION

Maintenance Authentication

The survey and inspection of the spar and rigging system should be carried out at regular intervals, improving the chance that any potential service issues will be caught. A Photographic Log and a Data/Service Log are an important part of this inspection.

Photographic Log

Building a visual library creates a point of reference from which to start inspections and plan future inspections, as well as forming a body of evidence should any questions or insurance claims arise.

Data/Service Log

A good data log includes part numbers, dimensions, a record of their condition, and how they are serviced. This helps in the planning of future inspections and enables shared knowledge between service technicians. The more information you have about your mast system, the better you will be able to maintain it.

Lubricant / Grease

Navtec recommends the use of a thin layer of lanolin-based waterproof grease on all fittings with dissimilar metals. For fittings with stainless bodies and screws, Navtec recommends a dry lubricant containing Molybdenum Disulphide. Please note that careful application is required, as the aerosol spray or liquid is black and can cause staining.

Loctite

Navtec uses Loctite Retaining Compound RC 680 (Green). Ensure surfaces are clean, free of debris/oil, and prepared with a Loctite primer before bonding. Please note that the high temperatures required for the removal of this compound render it unsuitable for use with Navtec insulators or in areas that are heat sensitive. In this application, a low temperature compound such as Loctite 242 (blue) should be used. Once the Loctite has set, test rigging fittings and set screws for locking. Please note that Loctite is not appropriate for use with fittings that may be tensioned or adjusted.

Rigging Tape

Navtec recommends using a non-adhesive tape in rigging applications. Navtec Rig Wrap is a white self-amalgamating tape which will leave no residue and forms better chafe protection than an electrical tape.

Limited Warranty and Key Terms of Supply by Navtec

Navtec warrants that in normal usage and with proper maintenance its products will conform with their specification for a period of three years from the date of purchase by the end user, subject to the conditions, limitations, and exceptions listed below. Any product, which proves to be defective in normal usage during that three-year period, will be repaired or, at Navtec's option, replaced by Navtec.

A. CONDITIONS AND LIMITATIONS

- I. Navtec's liability shall be limited to the repair or replacement of any parts of the product which are defective in materials or workmanship.
- II. Responsibility for the selection of products appropriate for the use intended by the Buyer shall rest solely with the Buyer and Navtec accepts no responsibility for any such selection.
- III. Navtec shall not be liable in any way for Product failure, or any resulting loss or damage which arises from:
 - a. use of a product in an application for which it was not designed or intended;
 - b. corrosion, ultra-violet degradation, or wear and tear;
 - c. a failure to service or maintain the product in accordance with Navtec's recommendations;
 - d. faulty or deficient installation of the product (unless conducted by Navtec);
 - e. any modification or alteration of the product;
 - f. conditions that exceed the product's performance specifications or safe working loads
- IV. Product subject to warranty claim must be returned to the Navtec outlet which supplied the product for examination unless otherwise agreed by Navtec in writing.
- V. This warranty does not cover any incidental costs incurred for the investigation, removal, carriage, transport, or installation of the product.
- VI. Service by anyone other than authorised Navtec representatives shall void this warranty unless it accords with Navtec guidelines and standards of workmanship.
- VII. Navtec's products are intended for use only in the marine environment. Buyers intending to use them for any other purpose should seek independent professional advice as to their suitability. Navtec accepts no liability arising from such other use.

B. EXCEPTIONS

Cover under this Warranty is limited to a period of one year from the date of purchase by the end user in the case of any of the following products or parts of products:

- Electric motors and associated electrical equipment
- Electronic controls
- Hydraulic pumps, valves, and actuators
- Weather seals
- Products used in "Grand Prix" racing applications

C. LIABILITY

- I. Navtec's liability under this warranty shall be to the exclusion of all other warranties or liabilities (to the extent permitted by law). In particular (but without limitation):
 - a. Navtec shall not be liable for:
 - Any loss of anticipated turnover or profit or indirect, consequential, or economic loss;
 - Damages, costs, or expenses payable to any third party;
 - Any damage to yachts or equipment;
 - Death or personal injury;

Some states and countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

- b. Navtec grants no other warranties regarding the fitness for purpose, use, nature, or satisfactory quality of the products.
- II. Where applicable law does not permit a statutory or implied warranty to be excluded, then such warranty, if permitted by that state or country's law, shall be limited to a period of one year from the date of purchase by the end user. Some states and countries do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you.

D. PROCEDURE

Notice for a claim for service under this warranty shall be made promptly and in writing by the end user to the Navtec outlet which supplied the product or to Navtec, 351 New Whitfield Street, Guilford, CT 06437, USA.

E. SEVERANCE CLAUSE

If any clause of this warranty is held by any court or other competent authority to be invalid or unenforceable in whole or in part, the validity of the remaining clauses of this warranty and the remainder of the clause in question shall not be affected.

F. OTHER RIGHTS

This warranty gives you specific legal rights, and you may also have other legal rights, which vary, from state to state and country to country.

In the case of European States a Consumer customer (as defined nationally) has legal rights under the application national law governing the sale of Consumer Goods; this warranty does not affect those rights.

G. LAW

This warranty shall be governed by and read in accordance with the laws of England or the state or country in which the first end user is domiciled at the time of purchase of the product.